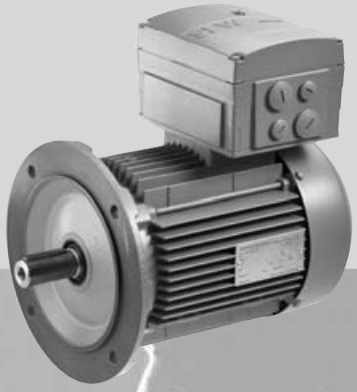
SEW EURODRIVE

MOVI-SWITCH®

Edition

08/2003



Operating Instructions

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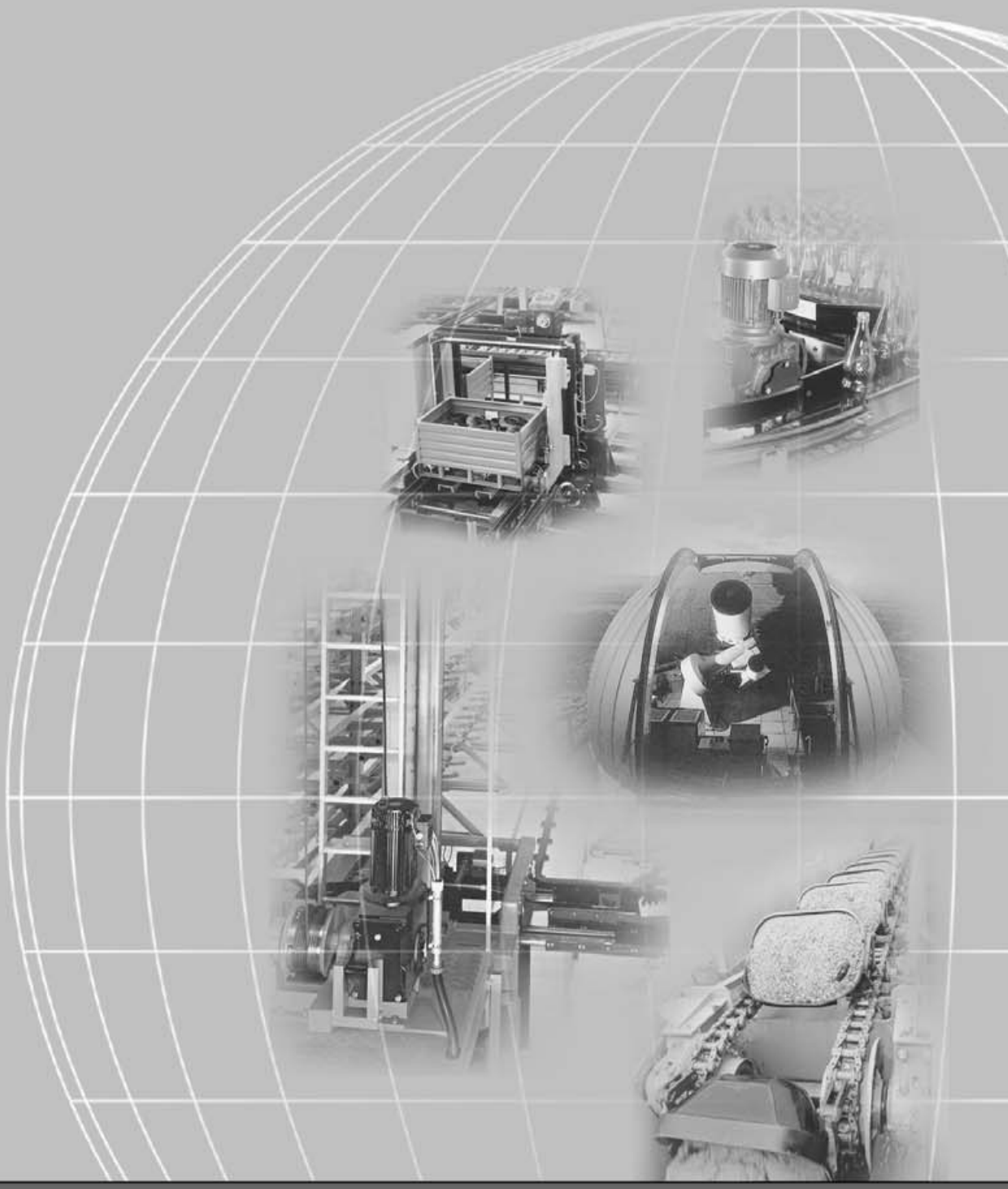

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1 Important Notes

Safety and warning instructions

Always follow the safety and warning instructions in this publication!

Electrical hazard
Possible consequences: Severe or fatal injuries.

Hazard
Possible consequences: Severe or fatal injuries.

Hazardous situation
Possible consequences: Slight or minor injuries.

Harmful situation
Possible consequences: Damage to the unit and the environment.

Tips and useful information.

A requirement of fault-free operation and fulfillment of any rights to claim under guarantee is that you adhere to the information in the operating instructions. Consequently, read the operating instructions before you start operating the drive!

These operating instructions contain vital service information and should be kept in close proximity to the drive.

Other documents

- Operating Instructions "DR/DT/DV AC Motors, CT/CV Asynchronous Servomotors"

Waste disposal

This product consists of:

- Iron
- Aluminum
- Copper
- Plastic
- Electronic components

Dispose of all components in accordance with applicable regulations!

2 MOVI-SWITCH® Safety Notes

- Never install damaged products or take them into operation. Please submit a complaint to the shipping company immediately in the event of a damage.
- Only specialists with the appropriate accident prevention training are to perform installation, startup and service work on the MOVI-SWITCH®. They must also comply with the regulations in force (e.g. EN 60204, VBG 4, DIN-VDE 0100/0113/0160).
- Preventive measures and protection devices must correspond to the regulations in force (e.g. EN 60204 or EN 50178).

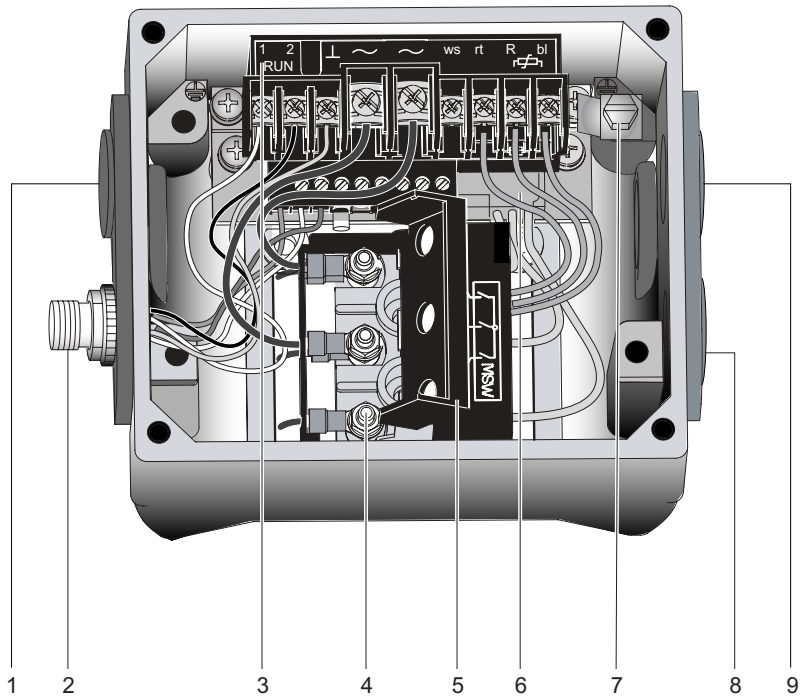
  Required preventive measures: Grounding of MOVI-SWITCH®.
- Before removing the terminal box cover/MOVI-SWITCH® control unit, disconnect the MOVI-SWITCH® from the supply system.
- The terminal box must remain closed during operation, i.e. terminal box cover/ MOVI-SWITCH® control unit must be installed.
- Mechanical blocking or internal safety functions of the unit can cause a motor standstill. Removing the cause of this problem or performing a reset can result in the motor re-starting on its own. If this is not permitted for safety reasons: In case of a malfunction of MOVI-SWITCH®, the unit must be disconnected from the power supply system (mains).
- Danger of burns: The MOVI-SWITCH® surface temperature can exceed 60 °C during operation!

Designated use

- These MOVI-SWITCH® drives are intended for industrial systems. They comply with the applicable standards and regulations and meet the requirements of the Low Voltage Directive 73/23/EEC.
- Technical data and information about the permitted conditions where the unit is used can be found on the nameplate and in these operating instructions.
- It is essential to observe this specified information!

3 Unit Design

3.1 MOVI-SWITCH® 1E



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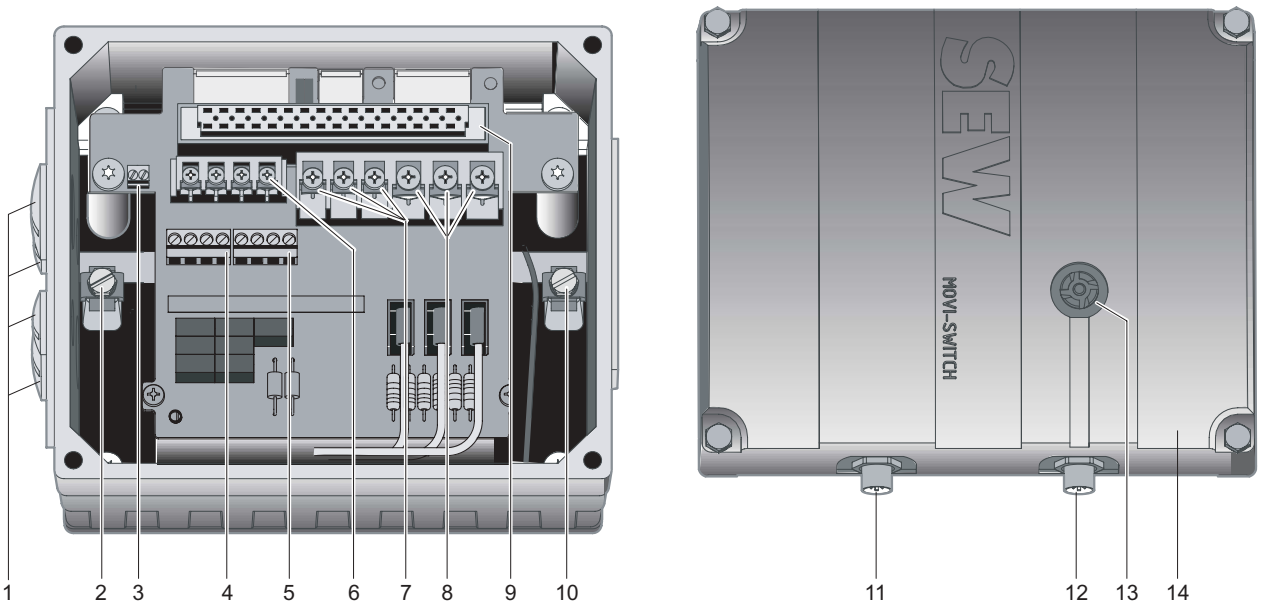
1 2 x M25 x 1.5 cable glands
2 M12 connector AVS1, standard coding (connection for control signals)
3 BGW brake control (only with brake motors)
4 Mains connection (L1, L2, L3)
5 Protective cover for power supply connections
6 MOVI-SWITCH® module
7 Screw for PE connection ⏚
8 Cable gland M16 x 1.5
9 2 x M25 x 1.5 cable glands

3.2 MOVI-SWITCH® 2S



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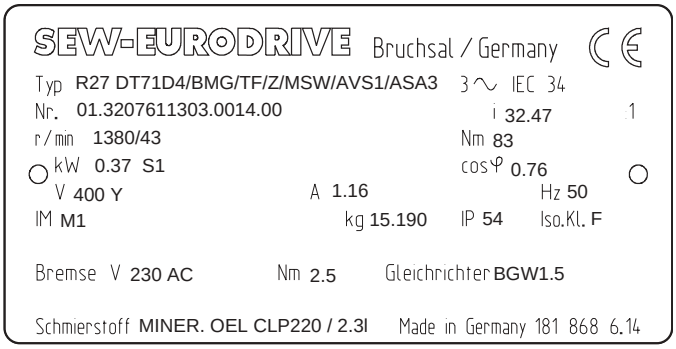
1 Cable glands
2 Screw for PE connection ⏚
3 Terminals X6 for ready signal (for CB0 design only)
4 Terminals X4 for internal wiring
5 Terminals X5 for internal wiring
6 Terminals X1 CB0 design: for voltage supply and direction of rotation signals
CK0 design: for AS-interface and auxiliary voltage (AUX-PWR)
7 Terminals X1 for brake connection
8 Terminals X1 for mains connection (L1, L2, L3)
9 Connection to MOVI-SWITCH® control unit
10 Screw for PE connection ⏚
11 M12 plug X102
12 M12 plug X101
13 Status LED
14 MOVI-SWITCH® control unit

3.3 Nameplate, unit designation MOVI-SWITCH® 1E (example)



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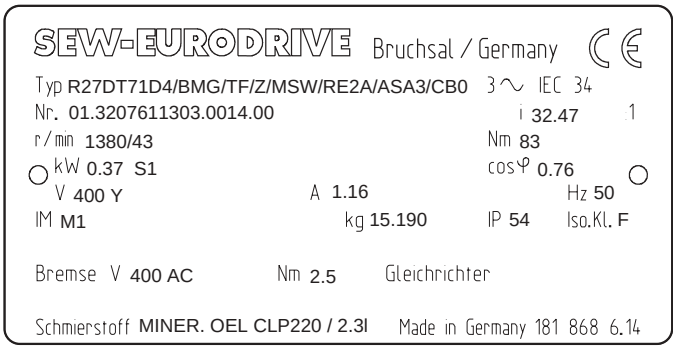
R 27 DT 71D4 /BMG/TF/Z/MSW/AVS1/ASA3

- Plug connector option
- M12 connector for control signals
- MOVI-SWITCH®
- Motor option Heavy fan
- Thermistor sensor (standard)
- Motor option brake
- Motor size and number of poles
- Motor series
- Gear unit size
- Gear unit series

3.4 Nameplate, unit designation MOVI-SWITCH® 2S

Motor nameplate (example)


SEW-EURODRIVE Bruchsal / Germany
Typ R27DT71D4/BMG/TF/Z/MSW/RE2A/ASA3/CB0 3~ IEC 34
Nr. 01.3207611303.0014.00 i 32.47 1
r/min 1380/43 Nm 83
kW 0.37 S1 cosφ 0.76
V 400 Y A 1.16 Hz 50
IM M1 kg 15.190 IP 54 Iso.Kl. F
Bremse V 400 AC Nm 2.5 Gleichrichter
Schmierstoff MINER. OEL CLP220 / 2.3l Made in Germany 181 868 6.14

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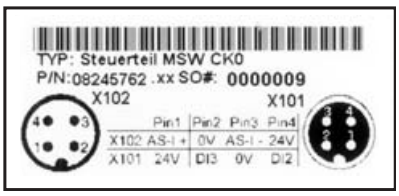
R 27 DT 71D4/BMG/TF/Z/MSW/RE2A/ASA3/CB0

- Design: 0 = Standard
- Signal type:
  B = Binary
  K = AS-interface
- Control
- Plug connector option
- Terminal box design
- MOVI-SWITCH®
- Motor option Heavy fan
- Thermistor sensor (standard)
- Motor option brake
- Motor size and number of poles
- Motor series
- Gear unit size
- Gear unit series

Electronic nameplate (example)



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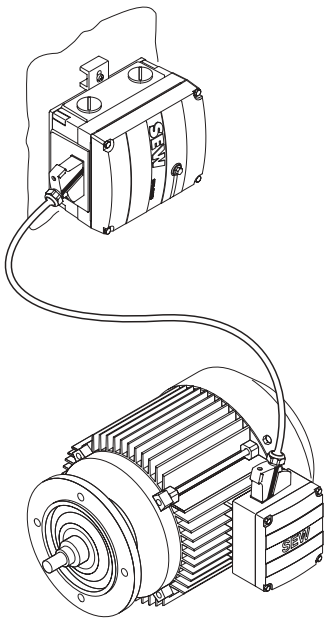
MSW CK0

- Design: 0 = Standard
- Signal type:
  B = Binary
  K = AS-interface
- Control
- MOVI-SWITCH

"Mounting close to the motor" design with option P22A

The following illustration shows an example for mounting of the MOVI-SWITCH® control unit close to the motor with corresponding nameplate and unit designation:



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MSW-2S-07A/P22A/RI2A/ALA4/CB0

- Design: 0 = Standard
- Signal type:
  B = Binary
  K = AS-interface
- Control
- Plug connector for the connection to the motor
- Terminal box design
- Adapter for mounting MOVI-SWITCH® control unit close to the motor
- MOVI-SWITCH®

4 Mechanical Installation (All MOVI-SWITCH® Variants)

4.1 Installation instructions

Before you begin

MOVI-SWITCH® may only be installed if:

- the entries on the nameplate of the drive match the voltage supply system,
- the drive is undamaged (no damage caused by transportation or storage).
- it is certain that the following requirements have been met:
  - temperature range can be limited by the gear unit, see the gear unit operating instructions
  - no oil, acid, gas, vapors, radiation, etc.

Installation tolerances

Shaft end	Flanges
Diameter tolerance in accordance with DIN 748 • ISO k6 at ∅ ≤ 50 mm • ISO m6 at ∅ > 50 mm (Center bore in accordance with DIN 332, shape DR)	Centering shoulder tolerance in accordance with DIN 42948 • ISO j6 at ∅ ≤ 230 mm • ISO h6 at ∅ > 230 mm

Setting up MOVI-SWITCH®

- MOVI-SWITCH® may only be mounted or installed in the specified position on a level, vibration-free and torsionally rigid support structure.
- Thoroughly remove anti-corrosion agents from the shaft extensions (use a commercially available solvent). Do not allow the solvent to penetrate the bearings and shaft seals – this could cause material damage!
- Carefully align MOVI-SWITCH® and driven machine to avoid placing any unacceptable strain on motor shafts (observe permitted overhung load and axial thrust values!).
- Do not butt or hammer the shaft end.
- Use an appropriate cover to protect motors in vertical mounting positions from objects or fluids entering!
- Ensure an unobstructed cooling air supply and that air heated by other apparatus cannot be drawn in or reused.
- Balance components for subsequent mounting on the shaft with a half key (output shafts are balanced with a half key). Any condensation drain holes are closed with plastic plugs and must not be opened unless needed.
- Do not leave any condensation drain holes open, since this defeats higher enclosure ratings.

Installation in damp locations or in the open

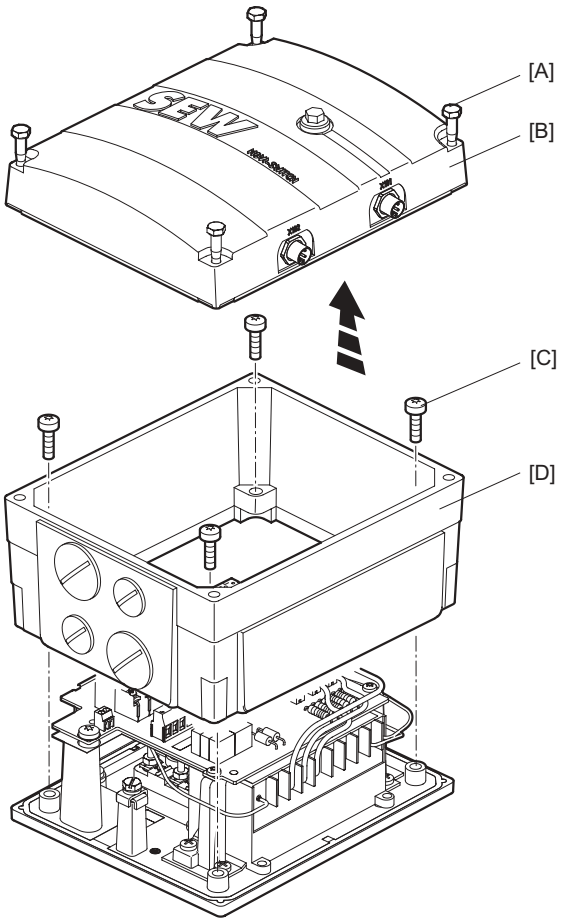
- Use suitable cable glands for the supply leads (use reducing adapters if necessary).
- Coat the threads of cable glands and filler plugs with sealant and tighten them well – then coat them again.
- Clean the sealing faces of the terminal box cover/MOVI-SWITCH® control unit well before reassembly.
- Restore the anticorrosive coating if necessary.
- Check the type of enclosure is authorized (refer to the nameplate).

4.2 Modular terminal box

We basically recommend purchasing pre-fabricated MOVI-SWITCH® 2S systems with the correct position of cable entries. In exceptional cases, the position of cable entries may be rotated to the opposite side.

Turning the terminal box

1. **Isolate the drive from the supply, safeguarding it against unintentional restart!**
2. Label the connections before disconnecting them for later re-installation.
3. Disconnect the supply system, control and sensor connections.
4. Remove screws [A] and detach MOVI-SWITCH® control unit [B].
5. Loosen screws [C] and remove terminal box [D].



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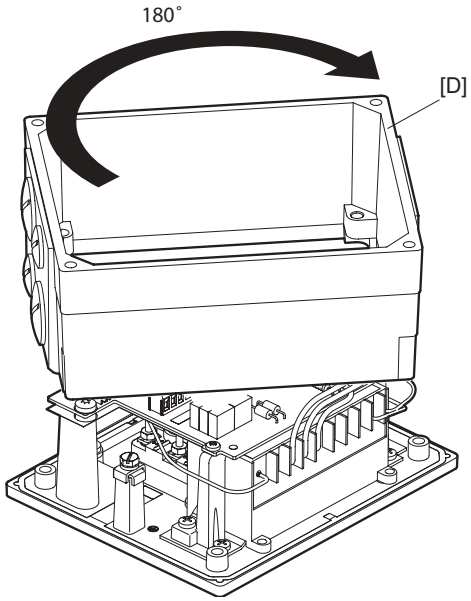
6. Turn terminal box [D] by 180°.



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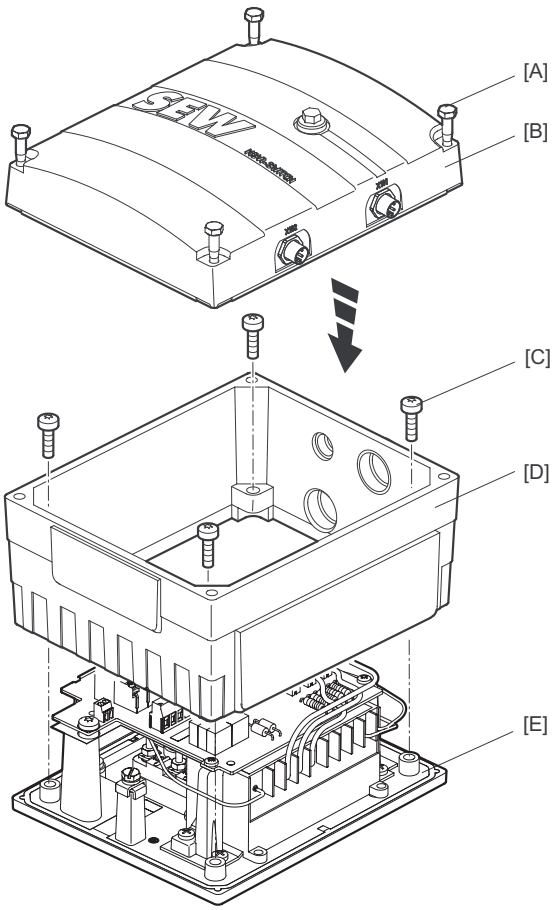
7. Place terminal box [D] on mounting plate [E] and fasten it with screws [C].
8. Reestablish cable connections.
9. Reattach MOVI-SWITCH® control unit [B] and secure with screws [A].



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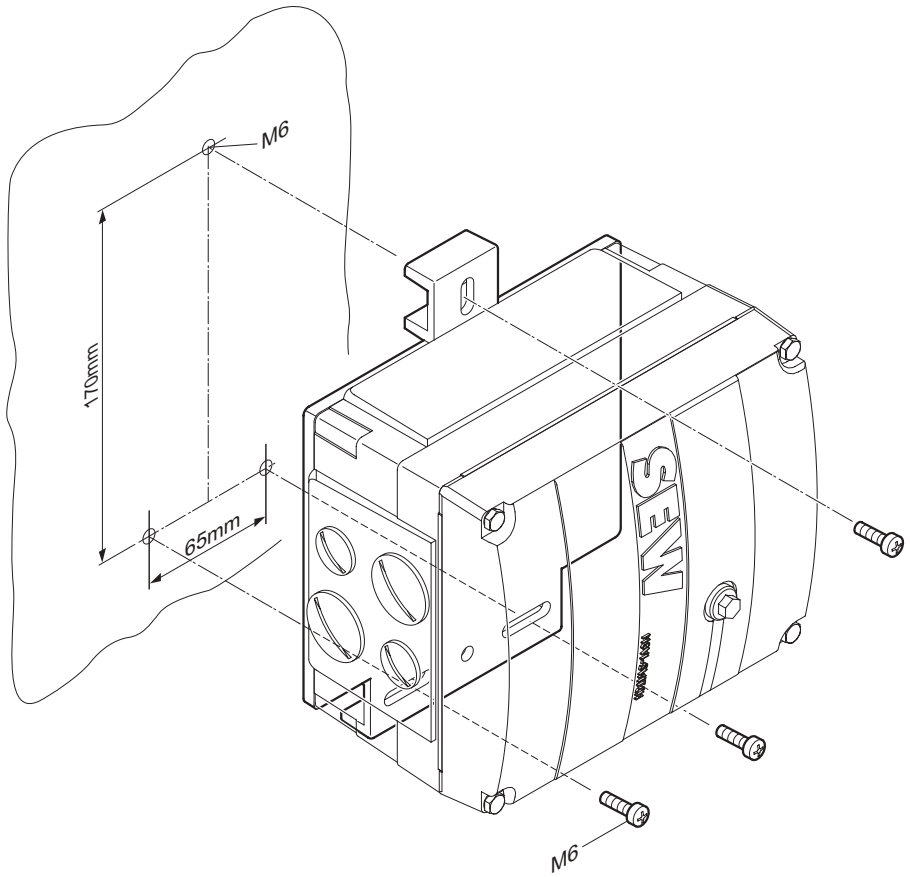
4.3 Mounting MOVI-SWITCH® control unit with option P22A close to the motor

The following illustration shows the mounting dimensions for mounting the MOVI-SWITCH® control unit with option P22A close to the motor:



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5 Electrical Installation

5.1 Installation instructions

Connecting supply system leads

- The rated voltage and frequency of MOVI-SWITCH® must correspond to the data for the power supply system (mains).
- Line cross section: according to input current I_{mains} for rated power (see Technical Data).
- Permitted line cross section of the MOVI-SWITCH® terminals

Power terminals	Control terminals (for internal wiring)
1.0 mm² – 4.0 mm² (2 x 4.0 mm²)	0.25 mm² – 1.0 mm² (2 x 0.75 mm²)[1)]
AWG17 – AWG10 (2 x AWG10)	AWG22 – AWG17 (2 x AWG18)

1) An exception is the OK terminal: 1 x 0.25 mm² – 0.75 mm²

- Use conductor end sleeves without insulating shrouds (DIN 46228 part 1, material E-CU).
- Install line fuses at the beginning of the supply system lead behind the supply bus junction. Use D, DO, NH or circuit breakers. The fusible rating should be selected in accordance with the line cross section.

Installation at 1000 meters above sea level (msl)

MOVI-SWITCH® drives with supply voltages of 380 to 500 V can be used at altitudes above 2000 msl up to 4000 msl under the following peripheral conditions.[1)]

- The rated continuous power is reduced based on the reduced cooling above 1000 m (see the section "Technical Data and Dimension Drawings").
- Above 2000 msl, the air and creeping distances are only sufficient for overvoltage class 2. If the installation requires overvoltage class 3, an additional external overvoltage protection must be used to ensure that overvoltage surges are limited to 2.5 kV phase-to-phase and phase-to-ground.
- If safe electrical separation is required, it must be implemented outside the device at altitudes above 2000 m MSL (Safe Electrical Separation in accordance with EN 50178).
- The permitted rated supply voltage of 3 x 500 V up to 2000 msl is reduced by 6 V for every 100 m to a maximum of 3 x 380 V at 4000 msl.

Connecting 24 V_{DC} supply

- Supply MOVI-SWITCH® either via the external 24 V_{DC} voltage or via AS-interface data line[2)] .

Conventional control (via binary commands)

- Connect the required control leads[3)] (e.g. CW/Stop, CCW/Stop).
- Route the control leads separately from the supply system leads.

1) The maximum altitude is limited by creeping distances and flameproof components such as electrolytic capacitors.
2) for CK0 design only
3) for CB0 design only

Protective devices

- MOVI-SWITCH® drives are equipped with integrated protective devices against an overload of the motor that are making external motor overload devices obsolete.
- **When mounting the MOVI-SWITCH® control unit close to the motor, the applicable regulations concerning line protection must be observed!**
- **The protection of the line between MOVI-SWITCH® control unit and motor must be ensured using the corresponding dimensioning or optional line protection components!**

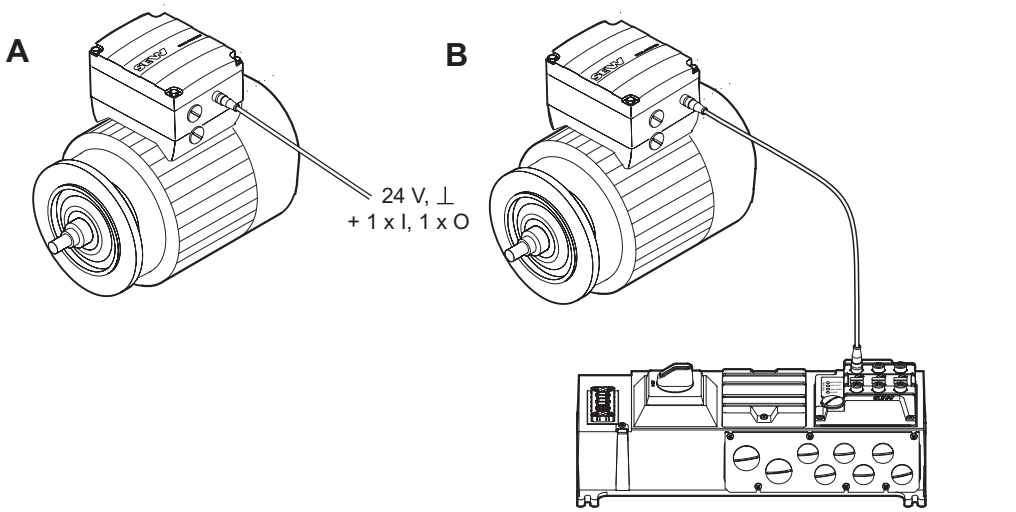
UL compliant installation

- Use only copper cables with the temperature range 60/75 °C as connection lead:
- The permitted tightening torques for MOVI-SWITCH® power terminals are 1.5 Nm (13.3 lb.in).
- MOVI-SWITCH® are suited for operation on voltage supply systems with grounded star (TN and TT systems) supplying a maximum supply current of 5000 A_{AC} and having a maximum voltage of 500 V_{AC}. The performance data of the fuses must not exceed 25 A/600 V.
- Use only tested units with a limited output voltage (V_{max} = 30 V_{DC}) and limited output current ($I \leq 8$ A) as an external 24 V_{DC} voltage source.
- UL certification applies only to operation in voltage supply systems with voltages to ground up to 300 V.

5.2 MOVI-SWITCH® 1E

Connection options for control signals

Design	A	B
Control signals	Binary signals (e.g. PLC)	MF../MQ.. fieldbus interface
Additional information	page 18	page 21, page 22



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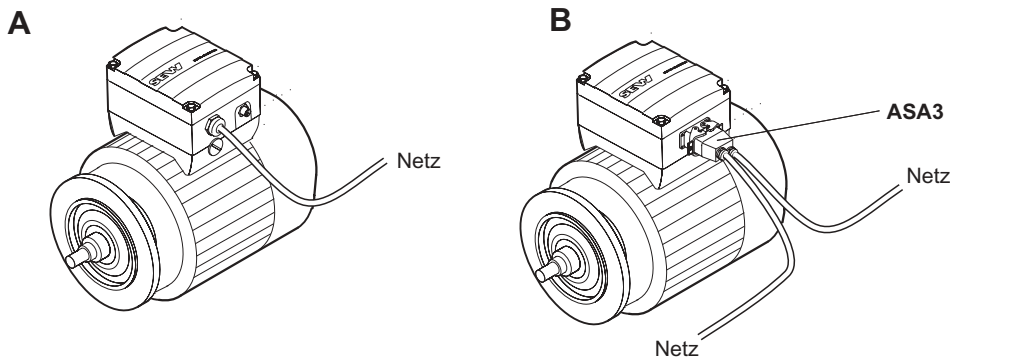
Connection options for power

Design Type designation	A MSW/AVS1	B MSW/AVS1/ASA3
Supply system connection	Terminals	ASA3 plug connector
Additional information	starting on page 18	starting on page 23



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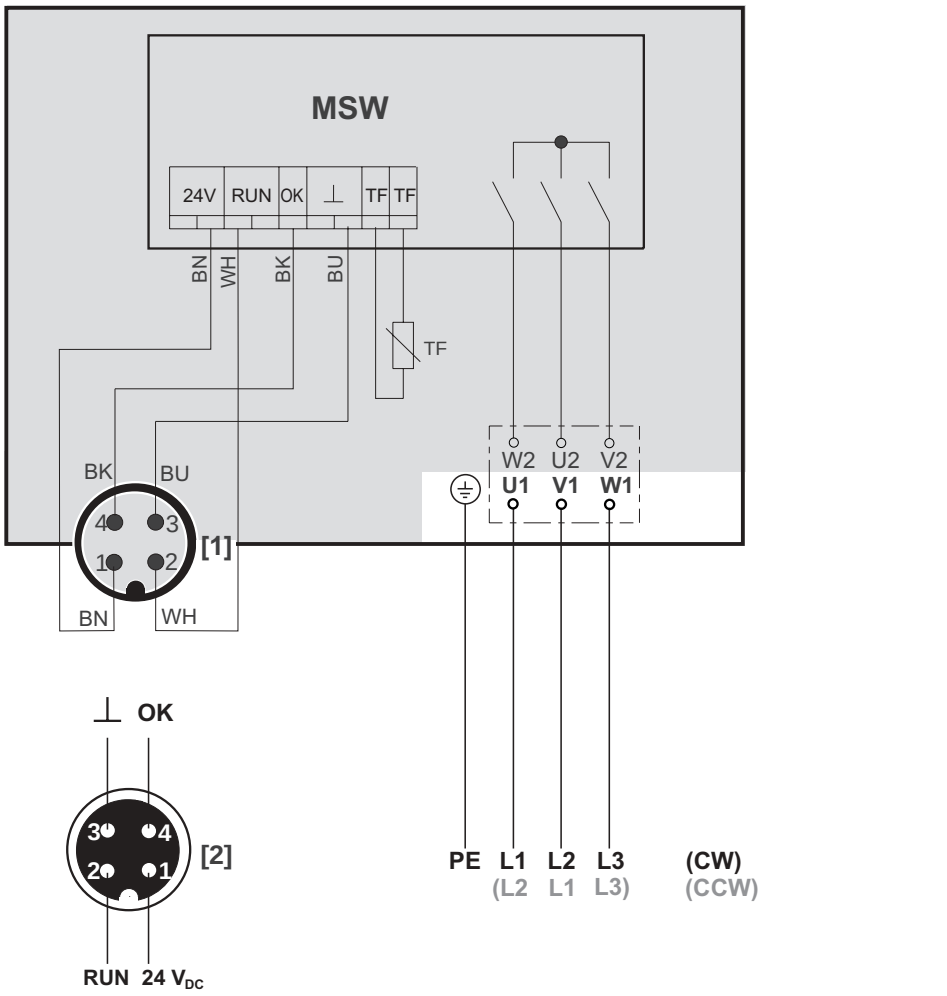
Description of the control signals (M12 connection)

PIN	Assign-ment	Function
1	**24 V**	Power supply voltage 24 V_{DC}
2	**RUN**	Control signal 24 V_{DC}, high = Start, low = Stop
3	⊥	Reference potential 0V24
4	**OK**	Checkback signal Ready for operation, 24 V_{DC}, high = ready for operation, low = overtemperature or no 24 V supply

Connection MOVI-SWITCH® 1E without brake control



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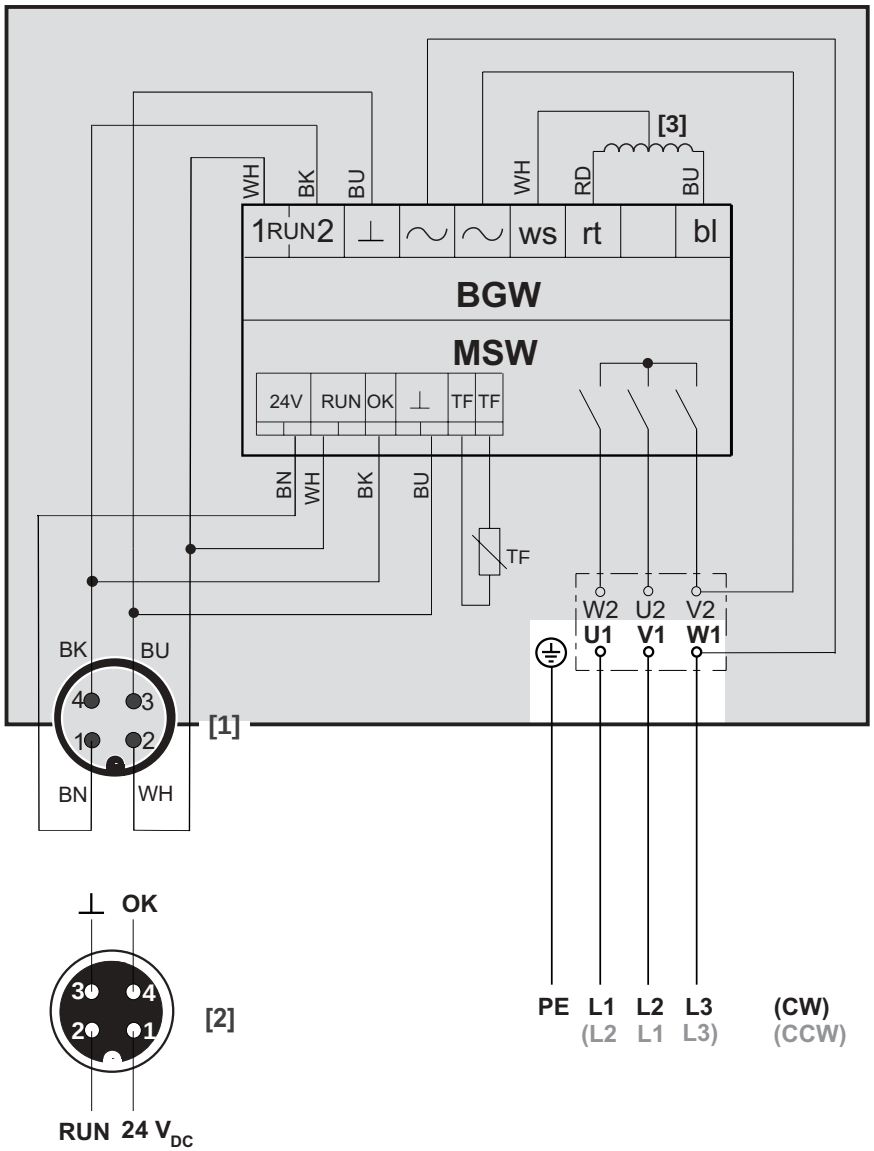
[1] M12 connector AVS1 (standard coding)
[2] M12 socket (standard coding)
CW Clockwise
CCW Counterclockwise

factory-wired

MOVI-SWITCH® 1E with brake control BGW

Brake voltage = supply voltage/$\sqrt{3}$ (phase star point)



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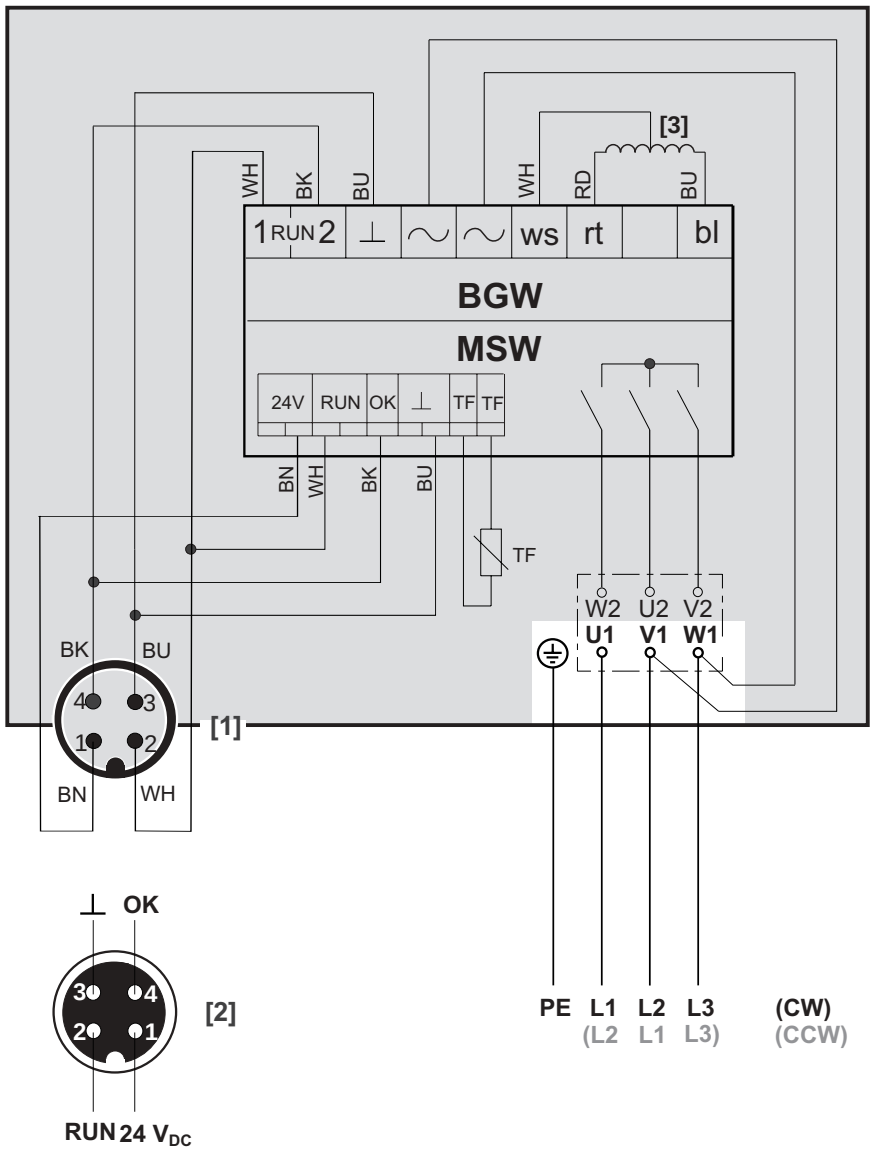
[1] M12 connector AVS1 (standard coding)
[2] M12 socket (standard coding)
[3] Brake coil
CW Clockwise
CCW Counterclockwise

factory-wired

Brake voltage = supply voltage (phase-phase)



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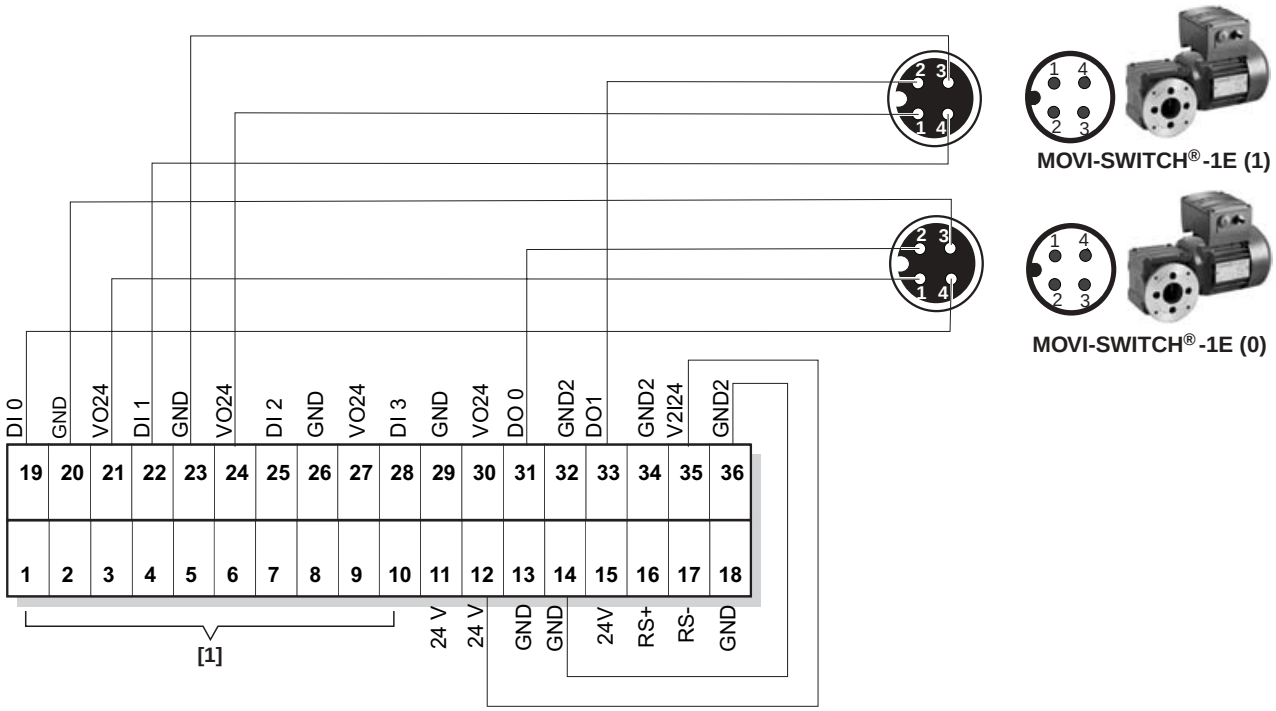
[1] M12 connector AVS1 (standard coding)
[2] M12 socket (standard coding)
[3] Brake coil
CW Clockwise
CCW Counterclockwise

factory-wired

Connection example 2 x MOVI-SWITCH® 1E with MF../MQ.. fieldbus interface

Connection via terminals (MF/MQ.2. fieldbus interface)



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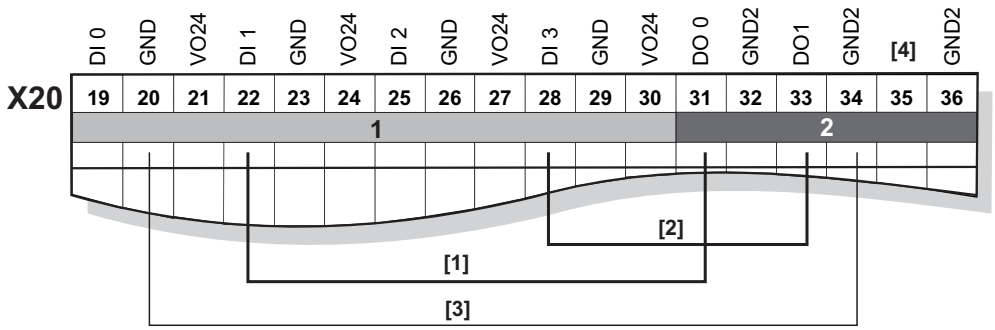
[1] Assignment depends on which fieldbus is used

Connection via M12 connector (MF/MQ.22 field-bus interface)

The required outputs must be internally jumpered to the sockets used according to the following figure.



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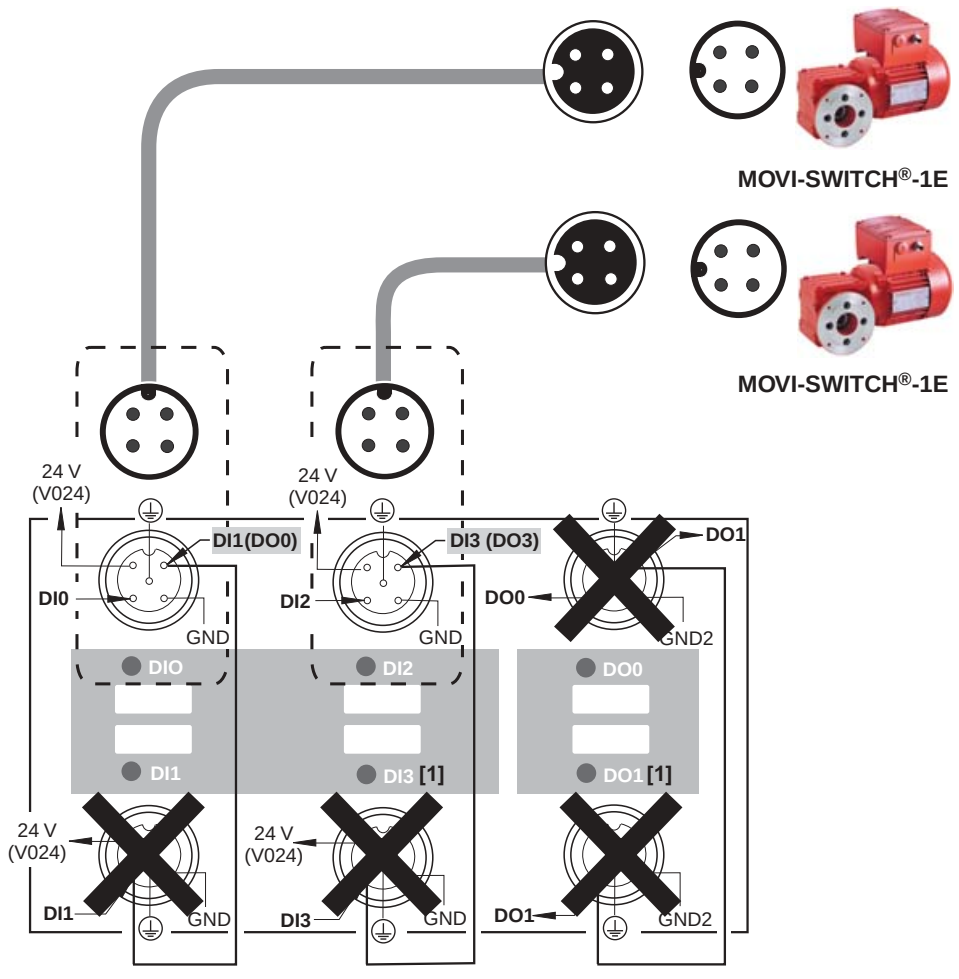
[1] DO0 is connected to pin 2 of socket DI0
[2] DO1 is connected to PIN2 of socket DI2
(only required for connection of two MOVI-SWITCH® to an MF/MQ.22 bus module)
[3] only required if fieldbus nodes are installed with two 24 V voltage circuits

After the outputs have been jumpered to the input sockets, two MOVI-SWITCH® 1E can be connected to the M12 sockets DI0 and DI2.

Input socket DI1 and output socket DO0 as well as input socket DI3 and output socket DO1 can no longer be used.



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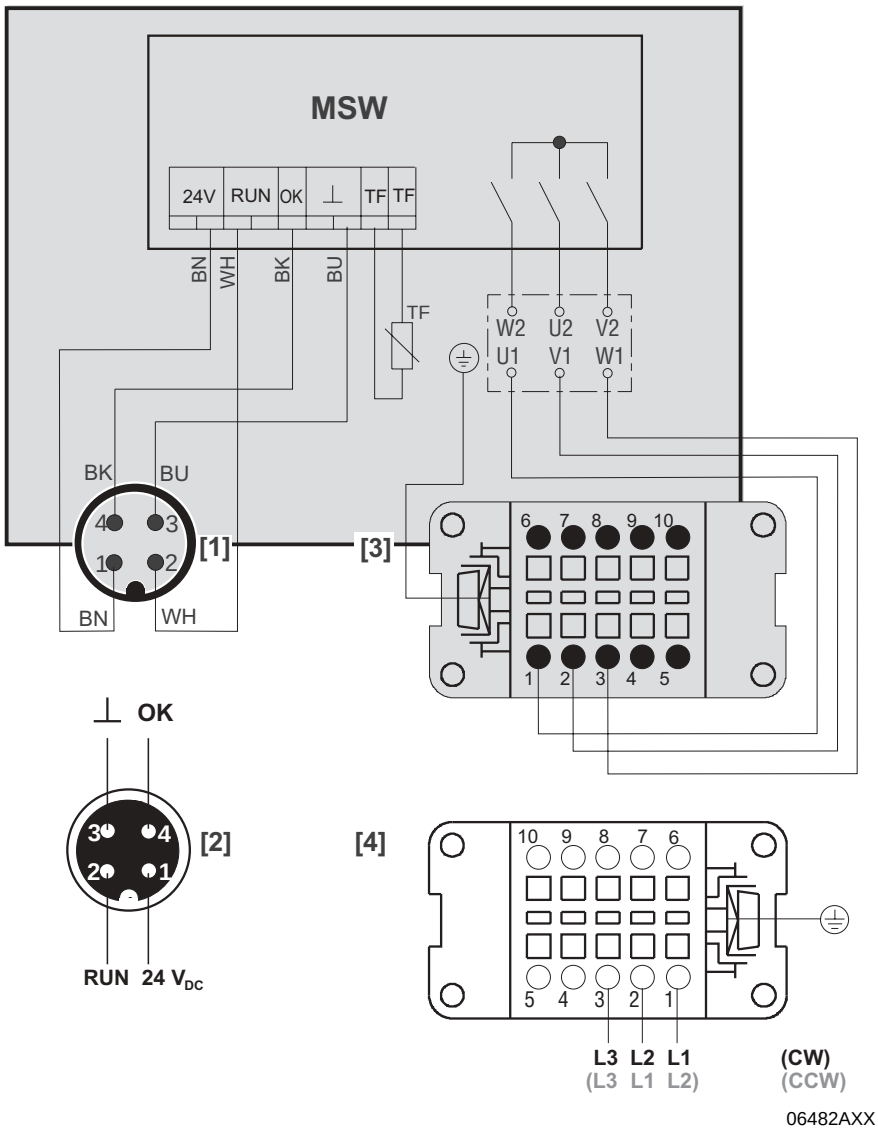
[1] cannot be used any longer if two MOVI-SWITCH® 1E are connected

MOVI-SWITCH® with optional ASA3 plug connector (without brake control)

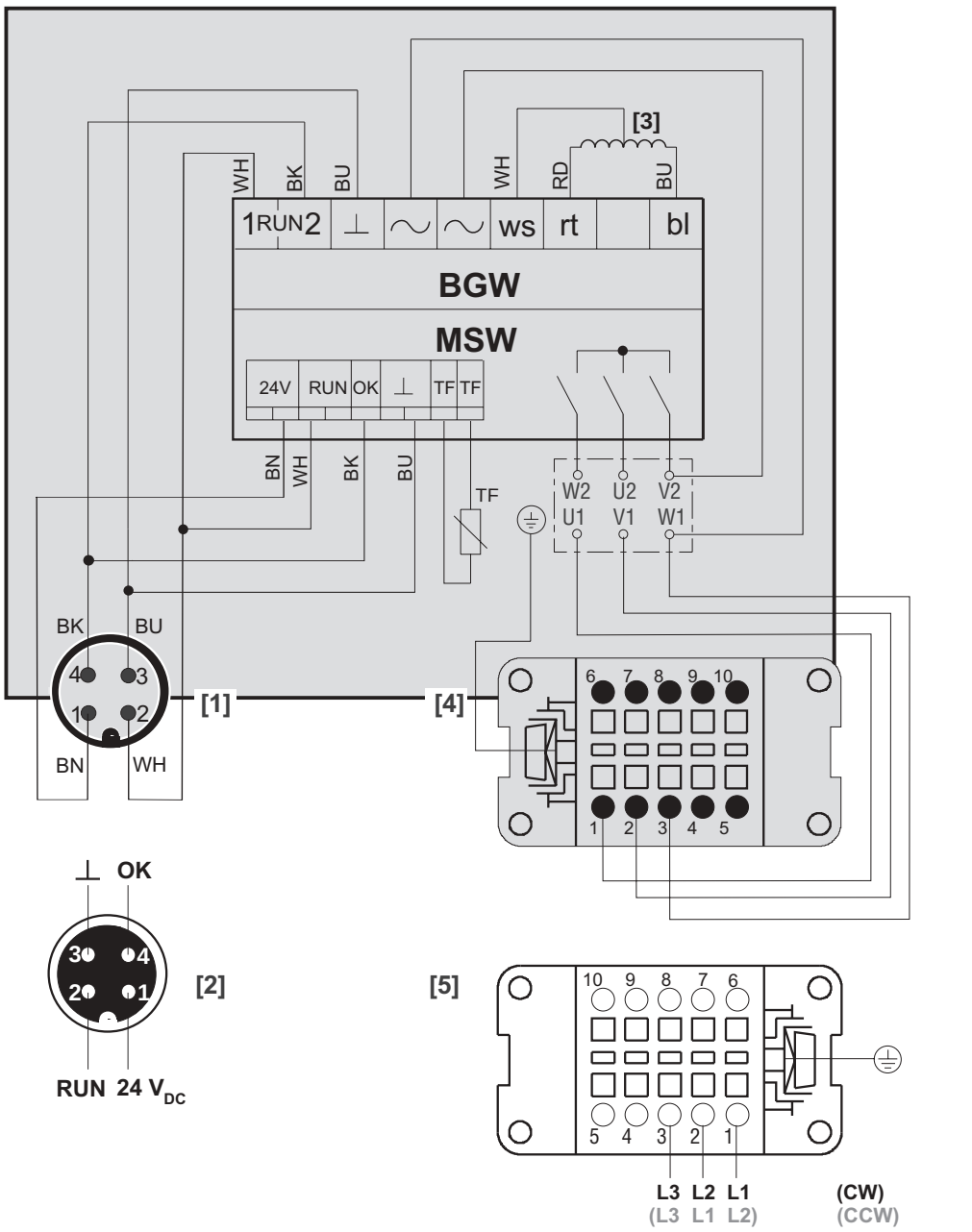


[1]	M12 connector AVS1 (standard coding)
[2]	M12 socket (standard coding)
[3]	ASA3 plug connector (plug)
[4]	Plug connector (socket)
CW	Clockwise
CCW	Counterclockwise

factory-wired

MOVI-SWITCH® with optional ASA3 plug connector (with brake control BGW)

Brake voltage = supply voltage/$\sqrt{3}$ (phase star point)



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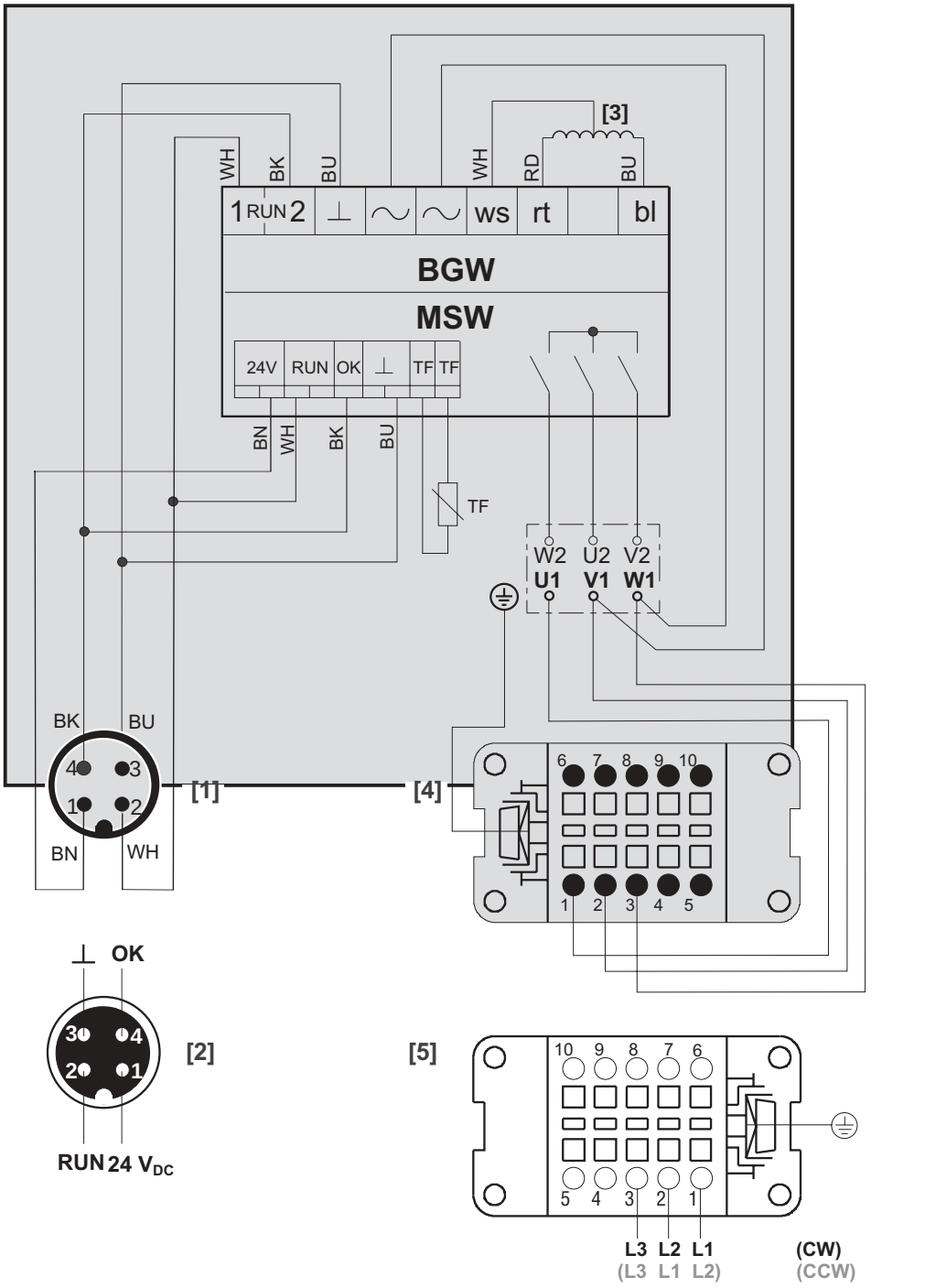
[1]	M12 connector AVS1 (standard coding)
[2]	M12 socket (standard coding)
[3]	Brake coil
[4]	ASA3 plug connector (plug)
[5]	Plug connector (socket)
CW	Clockwise
CCW	Counterclockwise

factory-wired

Brake voltage = supply voltage (phase-phase)



06484AXX

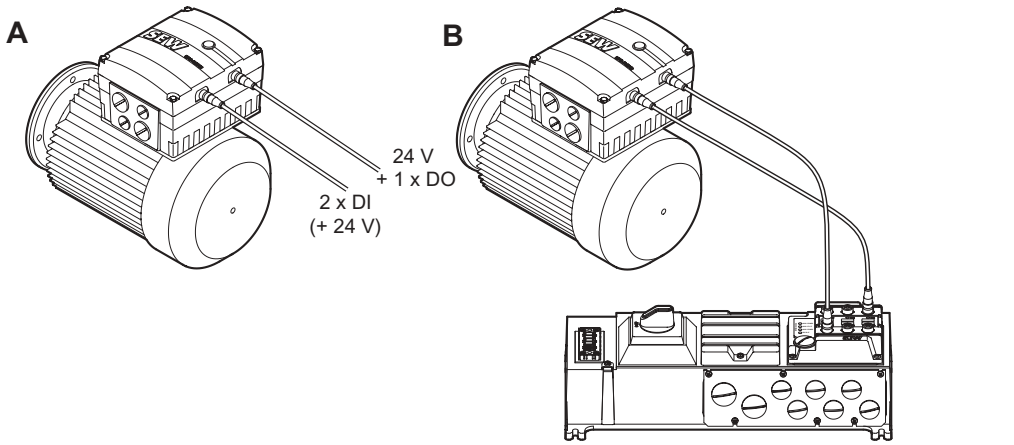
[1] M12 connector AVS1 (standard coding)
[2] M12 socket (standard coding)
[3] Brake coil
[4] ASA3 plug connector (plug)
[5] Plug connector (socket)
CW Clockwise
CCW Counterclockwise

factory-wired

5.3 MOVI-SWITCH® 2S/CB0 (binary control)

Connection options for control signals (for field and motor mounting)

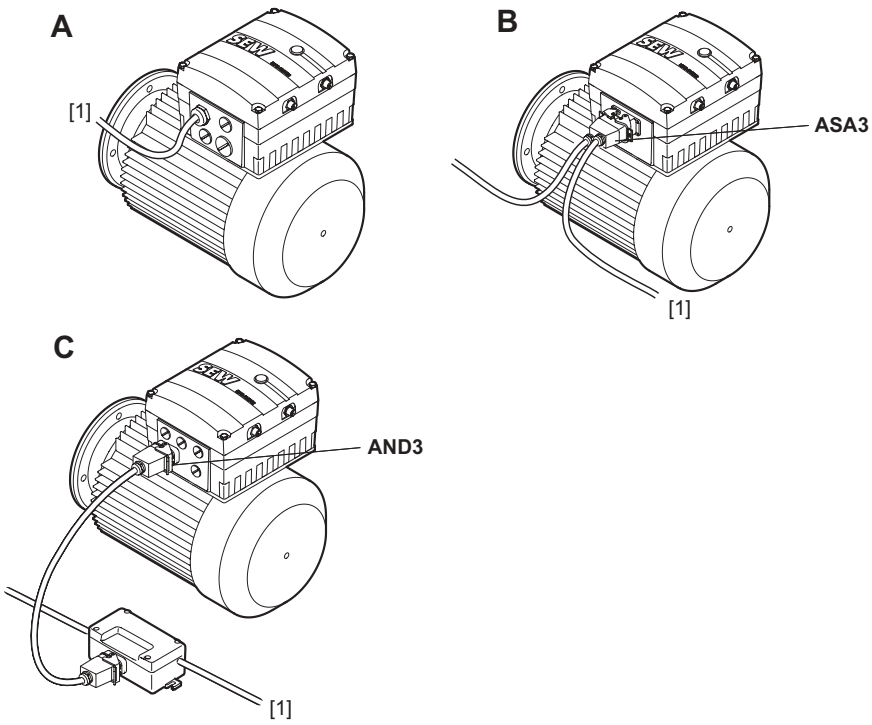
Design Unit designation	A MSW/RA2A/CB0	B MSW/RA2A/CB0
Control signals	Binary signals (e.g. PLC)	MF../MQ.. fieldbus interface
Additional information	page 27	page 31, page 32



51359AXX

Connection options for power (for field and motor mounting)

Design Type designation	A MSW/RA2A/CB0	B MSW/RE2A/ASA3/CB0	C MSW/RJ2A/AND3/CB0
Mains connection	Terminals	ASA3 plug connector	AND3 plug connector
Additional information	page 28	page 29	page 30

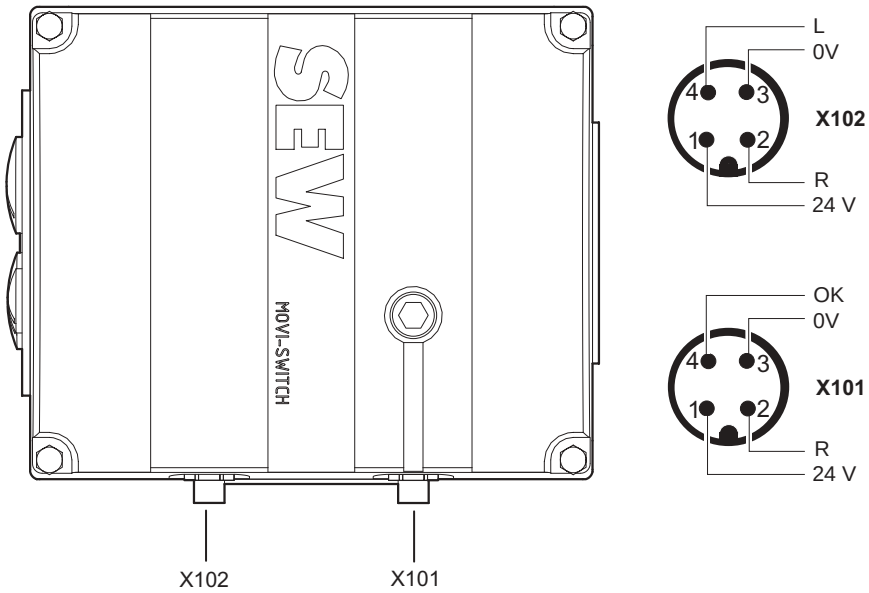


51362AXX

[1] Mains (power supply)

Pin assignment MOVI-SWITCH® control unit

The following illustration shows the assignment of the X102 and X101 plugs.

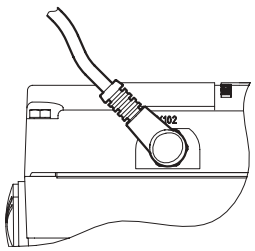


51353AXX

PIN		Assign-ment	Function
X102	**1**	**24 V**	Power supply voltage 24 V_{DC}, jumpered with X101/1
	2	**R**	Control signal 24 V_{DC} for CW rotation, high = Start, low = Stop (jumpered with X101/2)
	3	⊥	Reference potential 0V24 (jumpered with X101/3)
	4	**L**	Control signal 24 V_{DC} for CCW rotation, high = Start, low = Stop
X101[1)]	**1**	**24 V**	Power supply voltage 24 V_{DC} (jumpered with X102/1)
	2	**R**	Control signal 24 V_{DC} for CW rotation, high = Start, low = Stop (jumpered with X102/2)
	3	⊥	Reference potential 0V24 (jumpered with X102/3)
	4	**OK**	Checkback signal Ready for operation, 24 V_{DC}, high = ready for operation

1) Plug is compatible with M12 plug of MOVI-SWITCH® design 1E

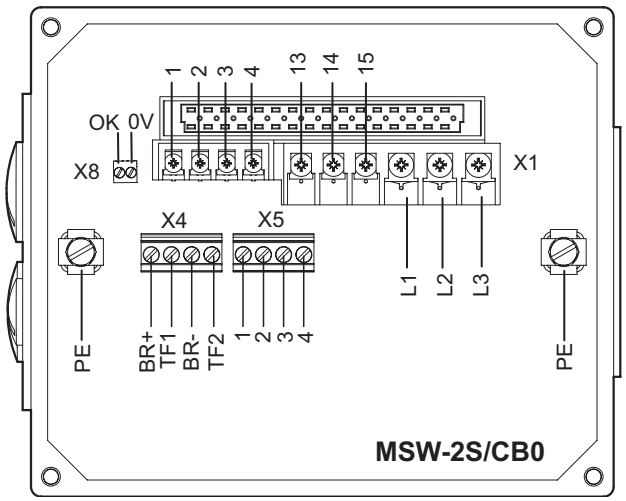
If angular plug connectors are used for the connection for X102 and X101, they can only be mounted in the position shown in the following figure! **For this reason, it is recommended using straight plug connectors!**



51408AXX

Terminal assignment of terminal box

The following diagram illustrates the assignment of MOVI-SWITCH® 2S/CB0 terminals.

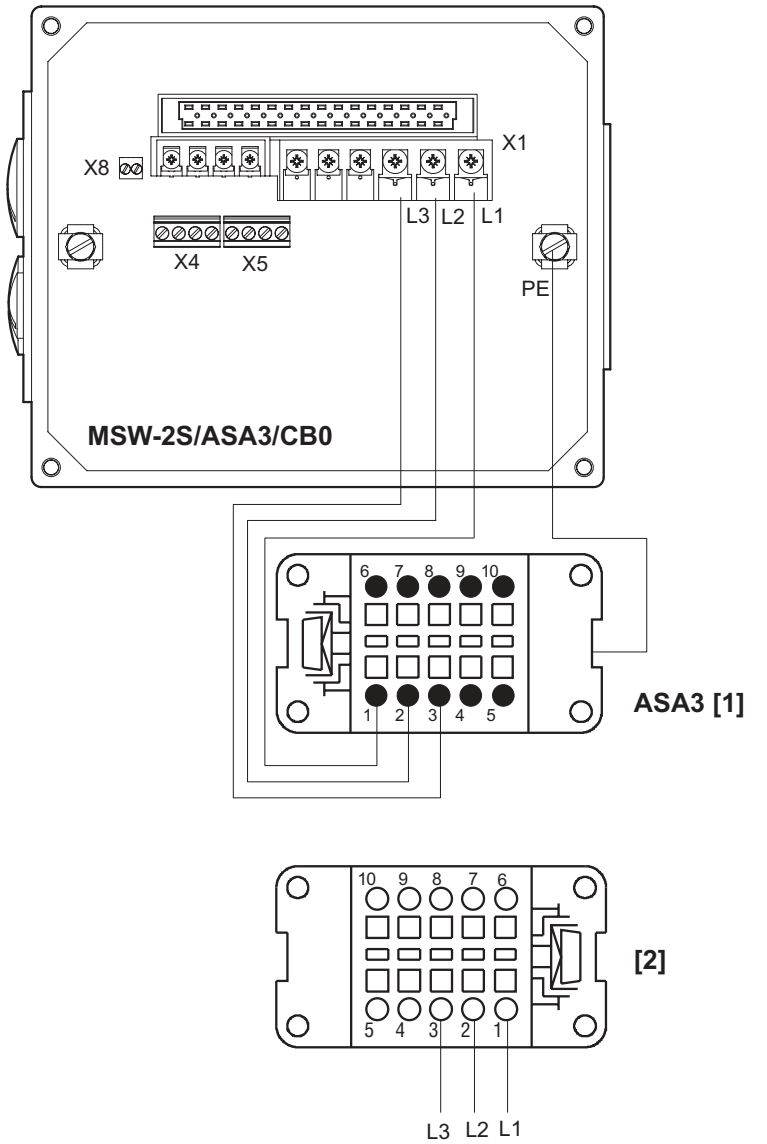


51345AXX

Terminal		Function
X1	**L1**	Mains terminal
	L2	Mains terminal
	L3	Mains terminal
	13	Brake connection
	14	Brake connection
	15	Brake connection
	1	24 V alternate 24 V supply (reserved for plug connector variants)
	2	L CCW/Stop (reserved for plug connector variants)
	3	0 V GND (reserved for plug connector variants)
	4	R CW/Stop (reserved for plug connector variants)
X4 :	**BR+**	for internal wiring
	TF1	for internal wiring
	BR-	for internal wiring
	TF2	for internal wiring
X5	**1**	for internal wiring
	2	for internal wiring
	3	for internal wiring
	4	for internal wiring
X8	**OK**	for internal wiring
	0 V	for internal wiring

ASA3 plug connector assignment

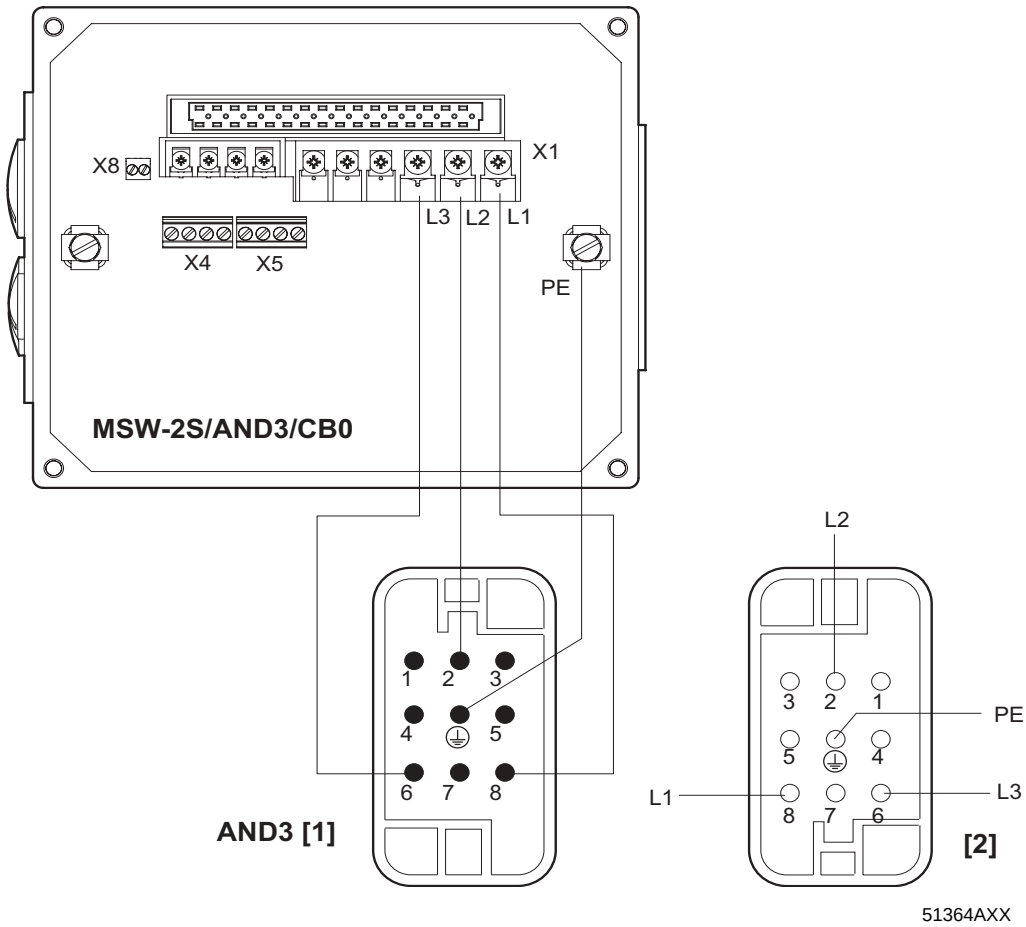
The following illustration shows the assignment of the optional ASA3 plug connector.



[1] ASA3 plug connector (plug)
[2] Plug connector (socket)

AND3 plug connector assignment

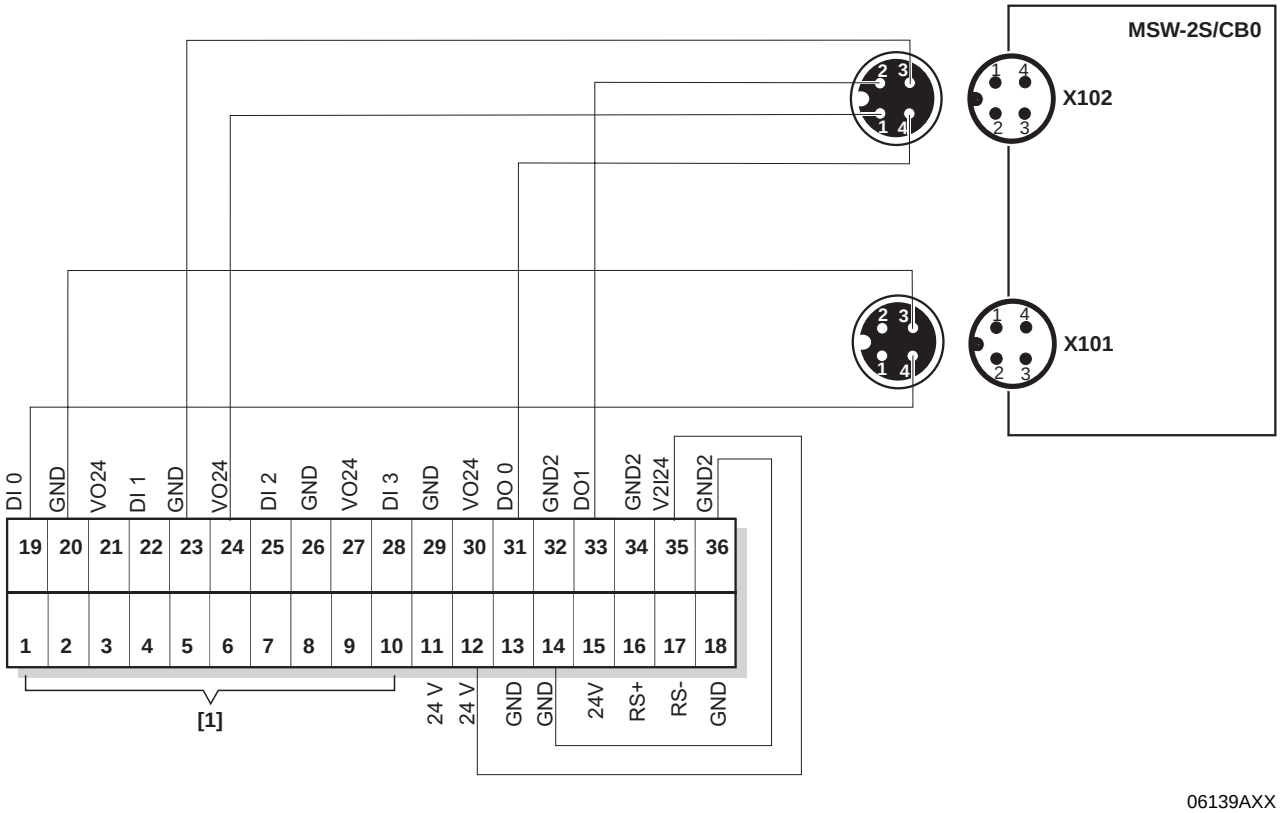
The following illustration shows the assignment of the optional AND3 plug connector.



[1] Plug connector AND3 (plug)
[2] Plug connector (socket)

Connection sample 2 x MOVI-SWITCH® 2S/CB0 with MF../MQ.. fieldbus interface

Connection via terminals (MF.2. fieldbus interface)

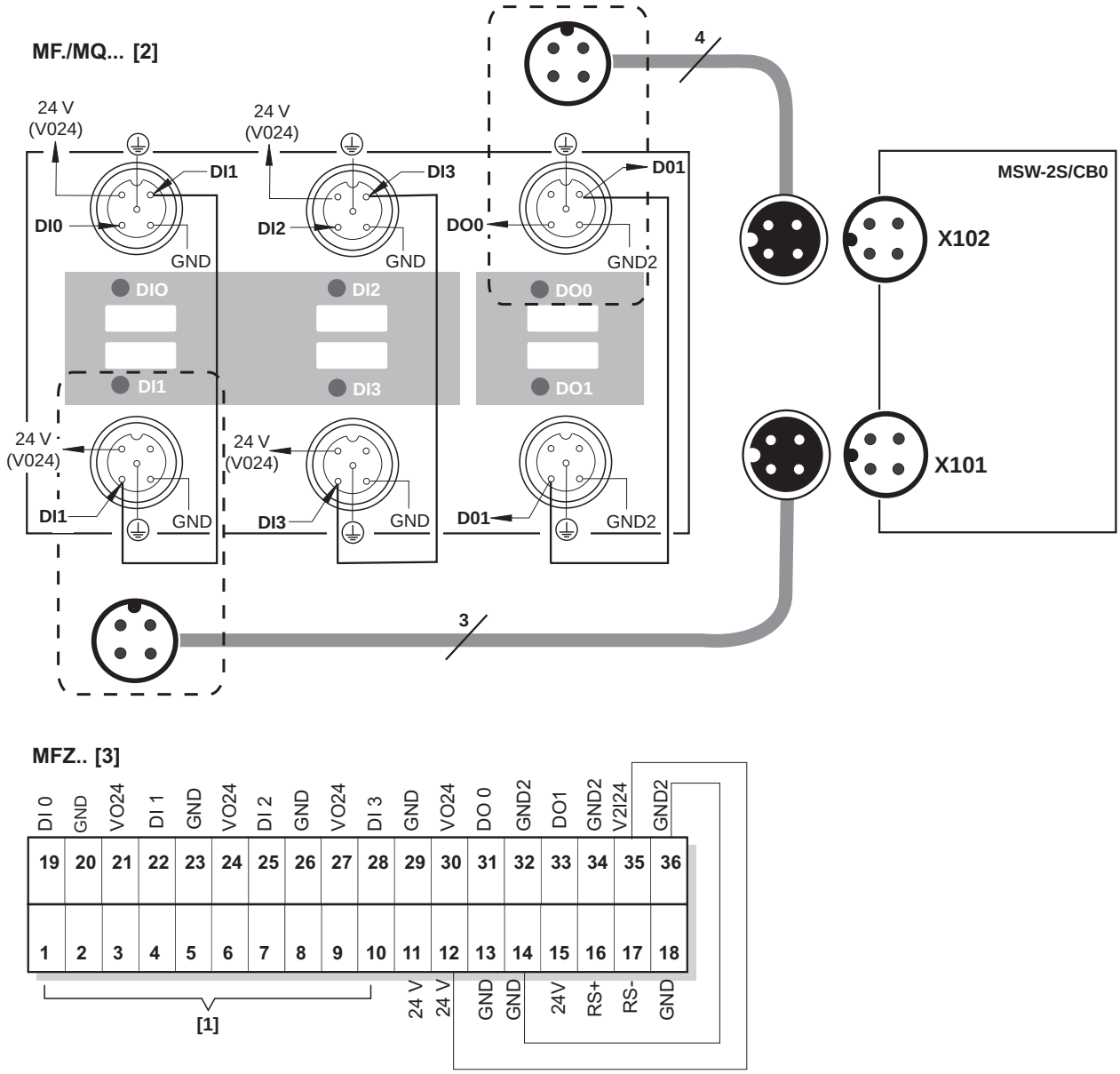


06139AXX

[1] Assignment depends on which fieldbus is used

Connection via M12 connector (MF.22 fieldbus interface)

The following illustration shows the connection of a MOVI-SWITCH® 2S/CB0 to an MF/MQ.22 fieldbus interface via M12 connector.



06140AXX

[1] Assignment depends on which fieldbus is used
[2] Fieldbus interface
[3] Connection module

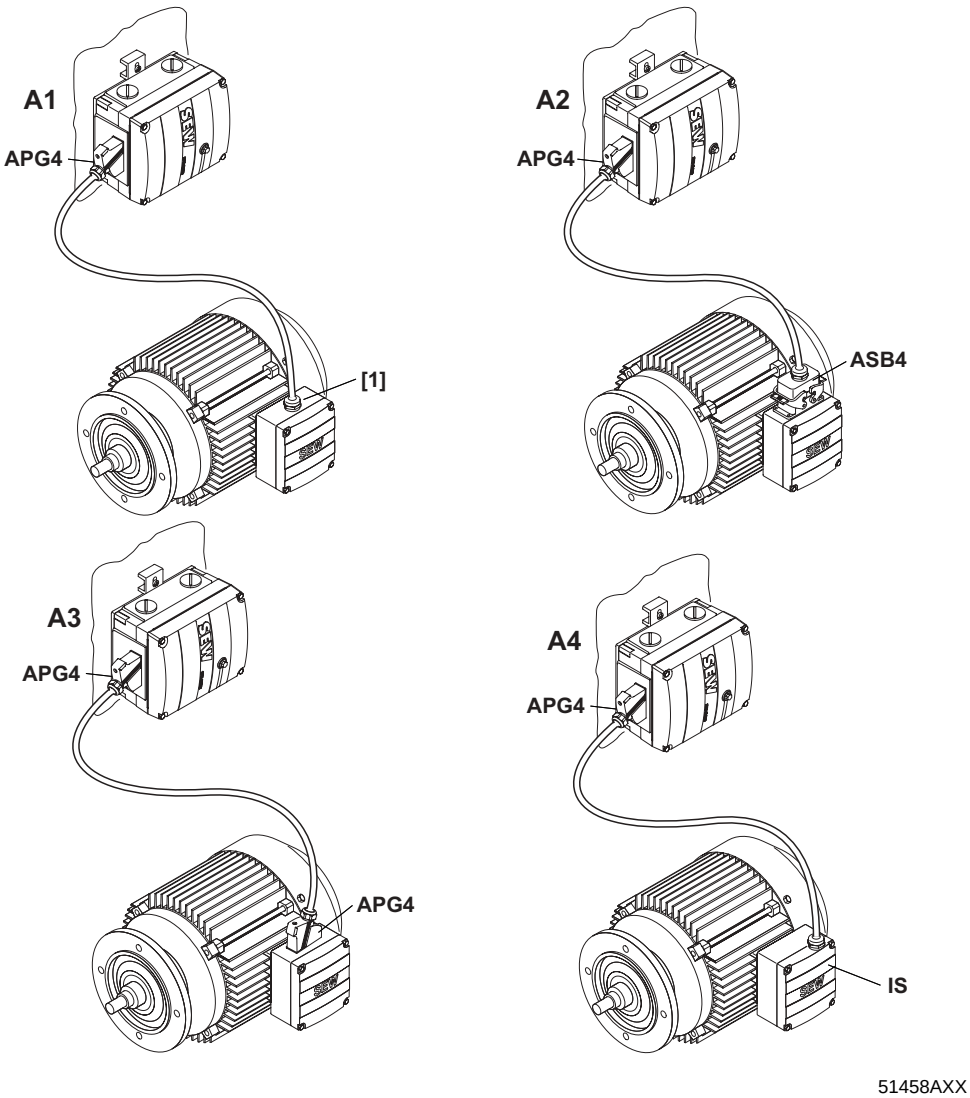
Connection between MOVI-SWITCH® and motor with mounting close to the motor

If the MOVI-SWITCH® 2S control unit with option P22A is mounted close to the motor, the connection to the motor uses a pre-fabricated cable. The following designs are possible on the MOVI-SWITCH® side:

- A: MSW-2S-07A/P22A/RI2A/**APG4**/C.0
  MSW-2S-07A/CC15/P22A/RI2A/**APG4**/C.0 (with line protection)
- B: MSW-2S-07A/P22A/RI2A/**ALA4**/C.0
  MSW-2S-07A/CC15/P22A/RI2A/**ALA4**/C.0 (with line protection)

The APG 4 design results in the following connection options to the motor, dependent upon the hybrid cable used:

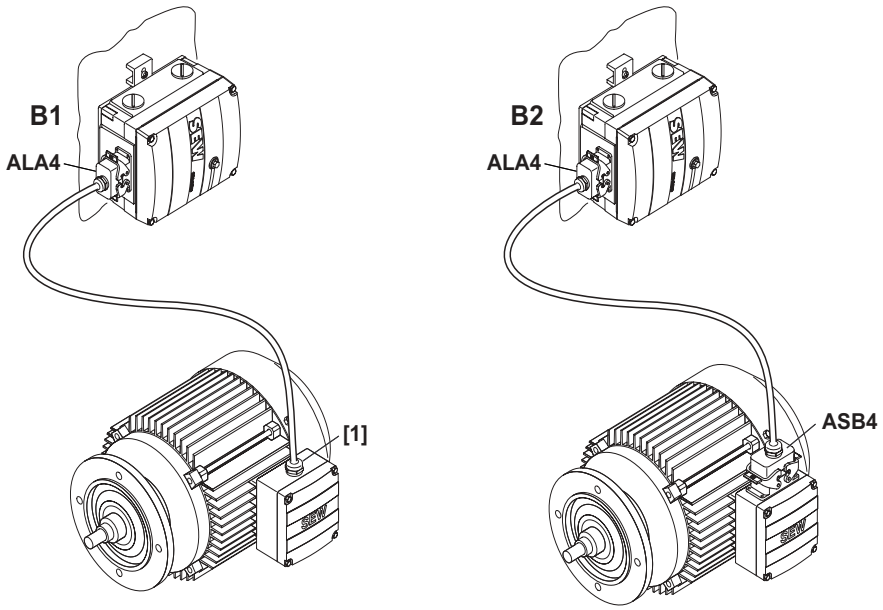
Design	A1	A2	A3	A4
MOVI-SWITCH®	APG4	APG4	APG4	APG4
Motor	Cable gland/terminals	ASB4	APG4	IS
Hybrid cable	0817 887 9	0817 889 5	0186 741 5	0816 326 X m 0816 325 1 m 0593 278 5 W 0593 755 8 W
See also...	starting on page 35	starting on page 35	starting on page 35	starting on page 35



[1] Connection via cable gland

The ALA 4 design results in the following connection options to the connected motor, dependent upon the hybrid cable used:

Design	B1	B2
MOVI-SWITCH®	ALA4	ALA4
Motor	Cable gland/terminals	ASB4
Hybrid cable	0817 886 0	0817 888 7
Additional information	starting on page 35	starting on page 35

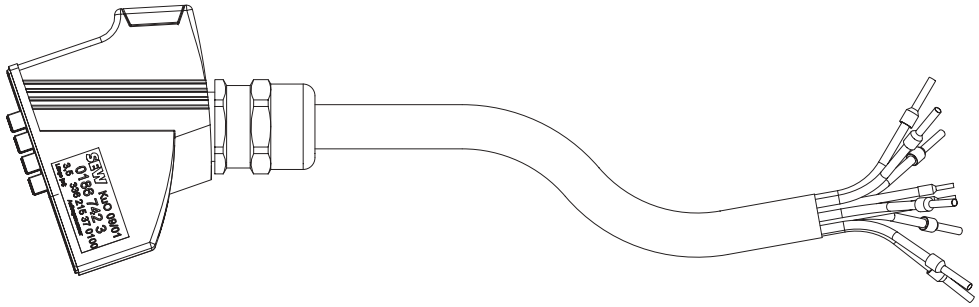


[1] Connection via cable gland

Hybrid cable design A

- **Design A1**

  Part number 0817 887 9 (motor lead cross section: 2.5 mm^2)

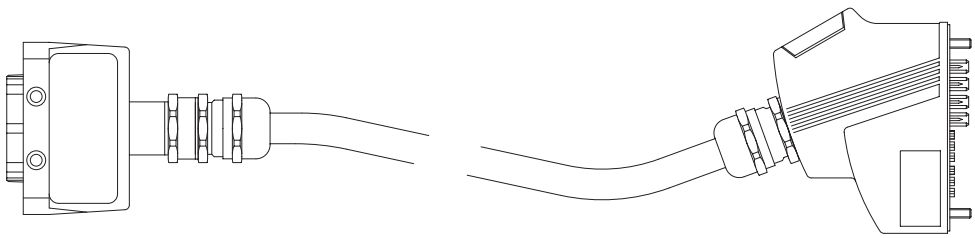


52152AXX

Cable assignment	
Motor terminal	**Core color / designation**
U1	Black / U1
V1	Black / V1
W1	Black / W1
13	Red / 13
14	White / 14
15	Blue / 15
TH	Black / 1
TH	Black / 2
PE terminal	Green-yellow + shield end (inside shield)

- **Design A2**

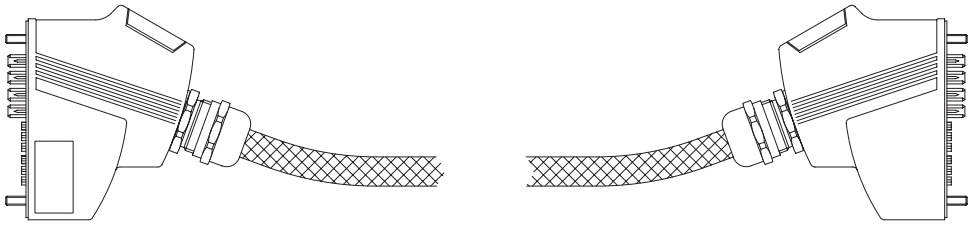
  Part number 817 889 5 (motor lead cross section: 2.5 mm^2)



52153AXX

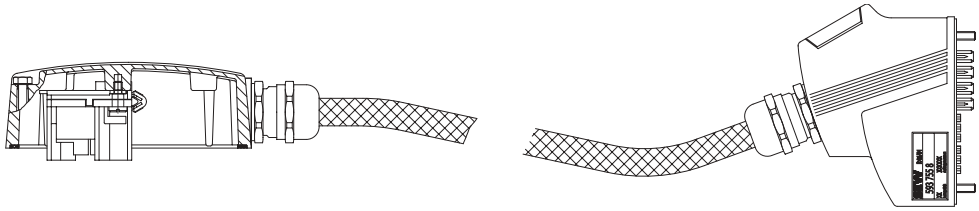
- **Design A3**

  Part number 0816 741 5 (motor lead cross section: 1.5 mm^2)



52154AXX

- **Design A4**



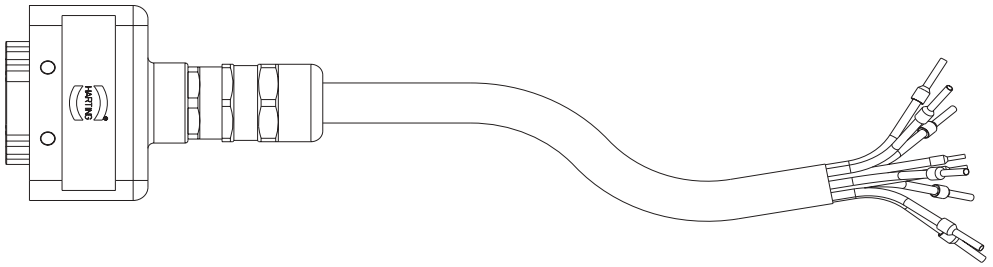
52155AXX

	MOVI-SWITCH® in star connection	MOVI-SWITCH® in delta connection
Motor with IS lower part Size DT71 – DT90	Hybrid cable part number 0593 278 5 (motor lead cross section: 1.5 mm^2)	Hybrid cable part number 0816 325 1 (motor lead cross section: 1.5 mm^2)
Motor with IS lower part Size DV100	Hybrid cable part number 0593 755 8 (motor lead cross section: 1.5 mm^2)	Hybrid cable part number 0816 326 X (motor lead cross section: 1.5 mm^2)

Hybrid cable design B

- **B1 version**

  Part number 0817 886 0 (motor lead cross section: 2.5 mm^2)

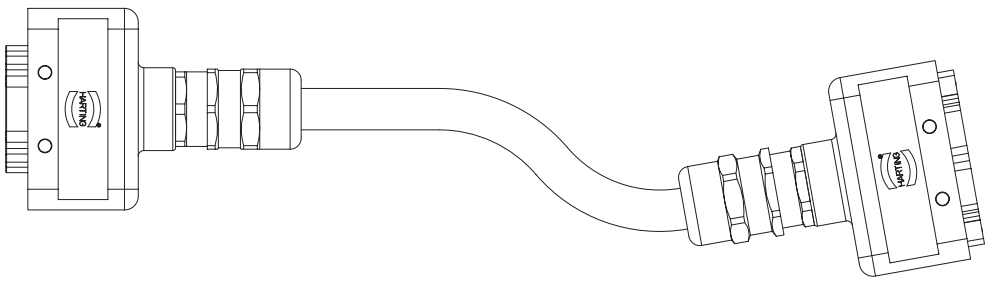


52156AXX

Cable assignment	
Motor terminal	**Core color / designation**
U1	Black / U1
V1	Black / V1
W1	Black / W1
13	Red / 13
14	White / 14
15	Blue / 15
TH	Black / 1
TH	Black / 2
PE terminal	Green-yellow + shield end (inside shield)

- **B2 version**

  Part number 0817 888 7 (motor lead cross section: 2.5 mm^2)



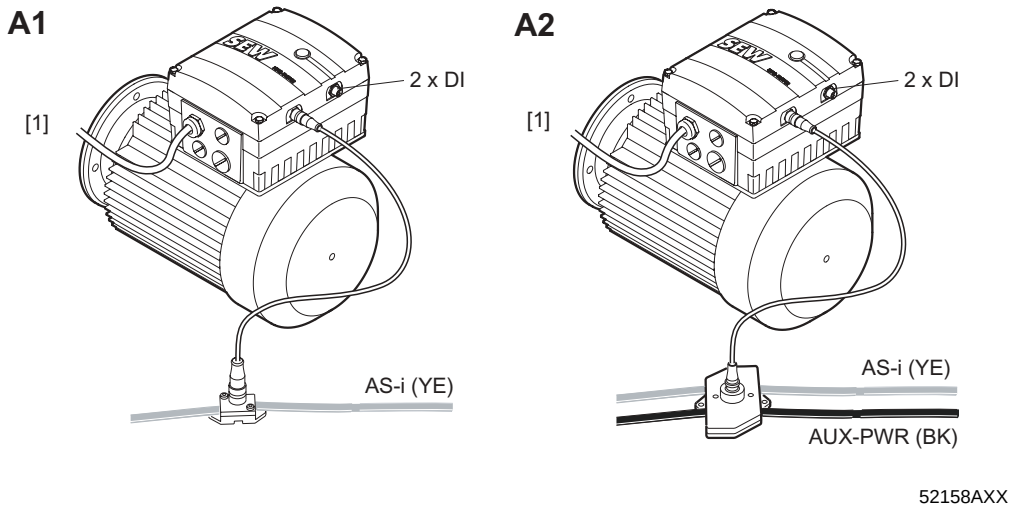
52157AXX

5.4 MOVI-SWITCH® 2S/CK0 (control with AS-interface)

Connection options for supply system and control

Design A: MSW/RA2A/CK0

Design	A1	A2
Type designation	**MSW/RA2A/CK0**	**MSW/RA2A/CK0**
DIP switch S1	0	1
AS-interface connection	yellow AS-interface cable via connector X102	yellow AS-interface cable via connector X102
24 V supply	yellow AS-interface cable via connector X102	black AS-interface cable via connector X102
Mains connection	Terminals	Terminals
See also...	page 40, page 41	page 40, page 41



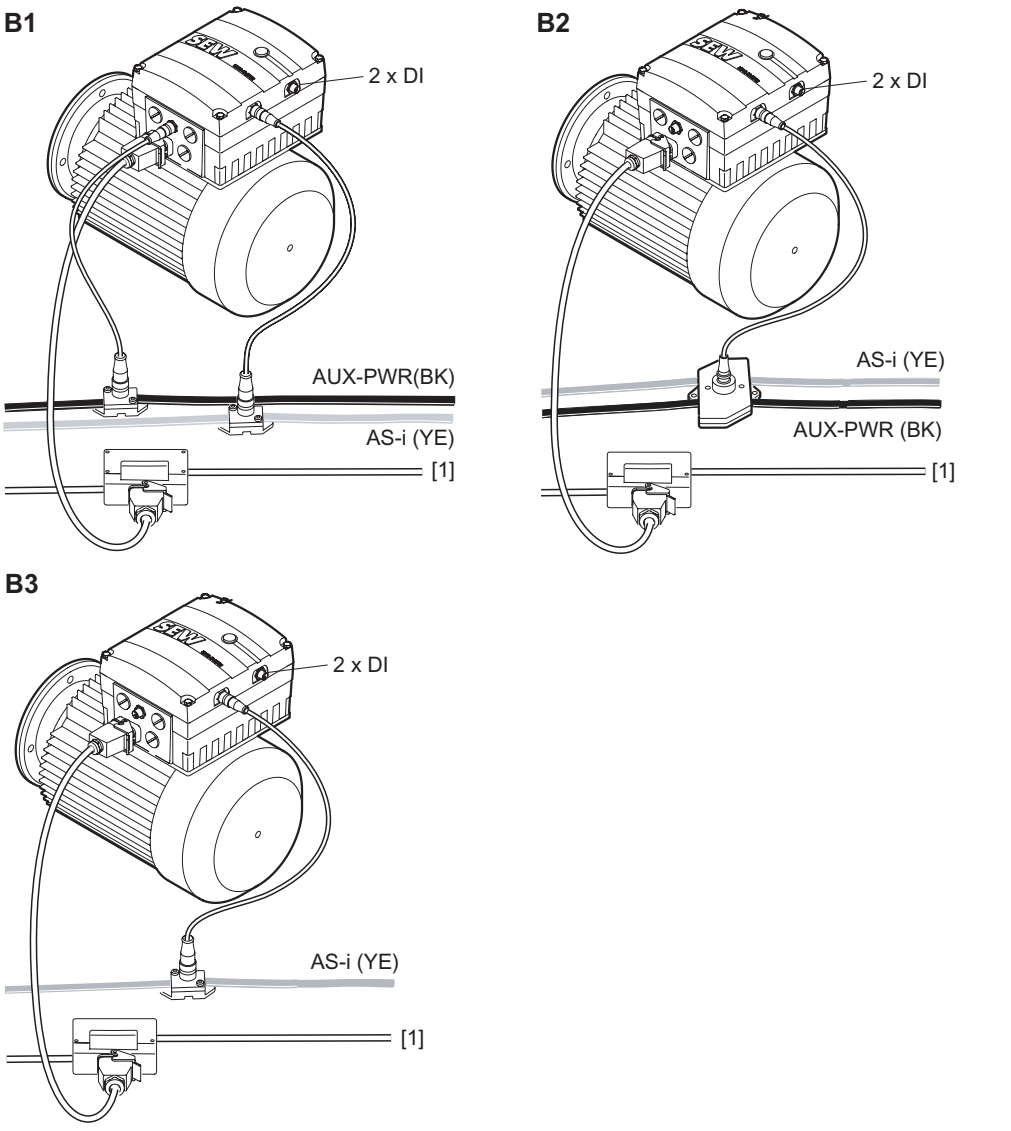
52158AXX

[1] Mains (power supply)

- The designs listed above are also valid for mounting the MOVI-SWITCH® control unit with option P22A close to the motor.

Design B: MSW/RJ2A/AND3/AVS0/CK0

Design Type designation	B1 MSW/RJ2A/AND3/AVS0/CK0	B2 MSW/RJ2A/AND3/AVS0/CK0	B3 MSW/RJ2A/AND3/AVS0/CK0
DIP switch S1	1	1	0
AS-interface connection	yellow AS-interface cable via connector X102	yellow AS-interface cable via connector X102	yellow AS-interface cable via connector X102
24 V supply	black AS-interface cable via connector AVS0 (terminal box)	black AS-interface cable via connector X102	yellow AS-interface cable via connector X102
Mains connection	AND3 plug connector	AND3 plug connector	AND3 plug connector
See also...	page 40, page 42	page 40, page 42	page 40, page 42



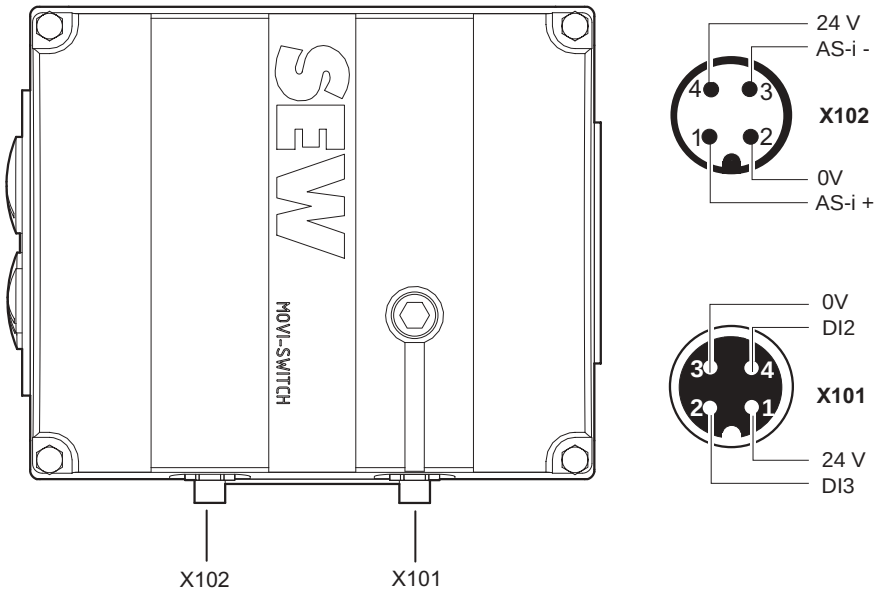
52265AXX

[1] Mains (power supply)

- The designs listed above are also valid for mounting the MOVI-SWITCH® control unit with option P22A close to the motor.

Plug/socket assignment of MOVI-SWITCH® control unit

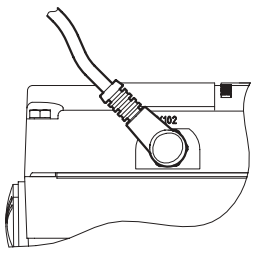
The following illustration shows the assignment of the plug X102 and X101.



51352AXX

PIN		Assign-ment	Function
X102	**1**	AS-i +	AS-interface data cable + Voltage supply for MSW if DIP switch AUX-PWR (S1) = 0
	2	⊥	Reference potential 0V24
	3	AS-i -	AS-interface data cable - Voltage supply for MSW if DIP switch AUX-PWR (S1) = 0
	4	24 V	24 V_{DC} power supply voltage if DIP switch AUX-PWR (S1) = 1 (alternative to voltage supply via AS-interface data cable)
X101	**1**	24 V	Power supply voltage 24 V_{DC} for sensors
	2	DI3	Switching signal from sensor 2
	3	⊥	0V24 reference potential for sensors
	4	DI2	Switching signal from sensor 1

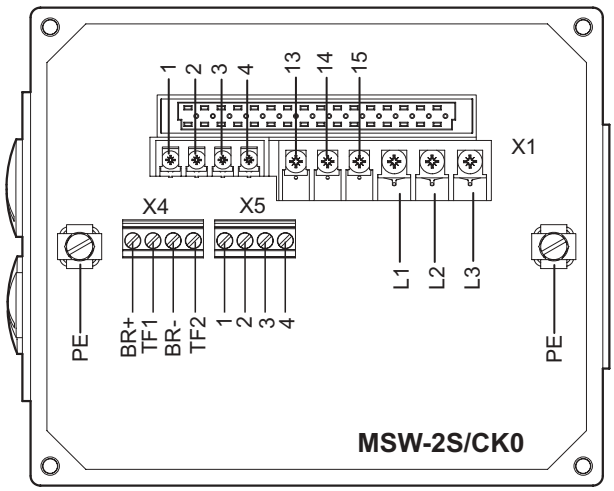
If angular plug connectors are used for the connection for X102 and X101, they can only be mounted in the position shown in the following figure! **For this reason, it is recommended using straight plug connectors!**



51408AXX

Terminal assignment

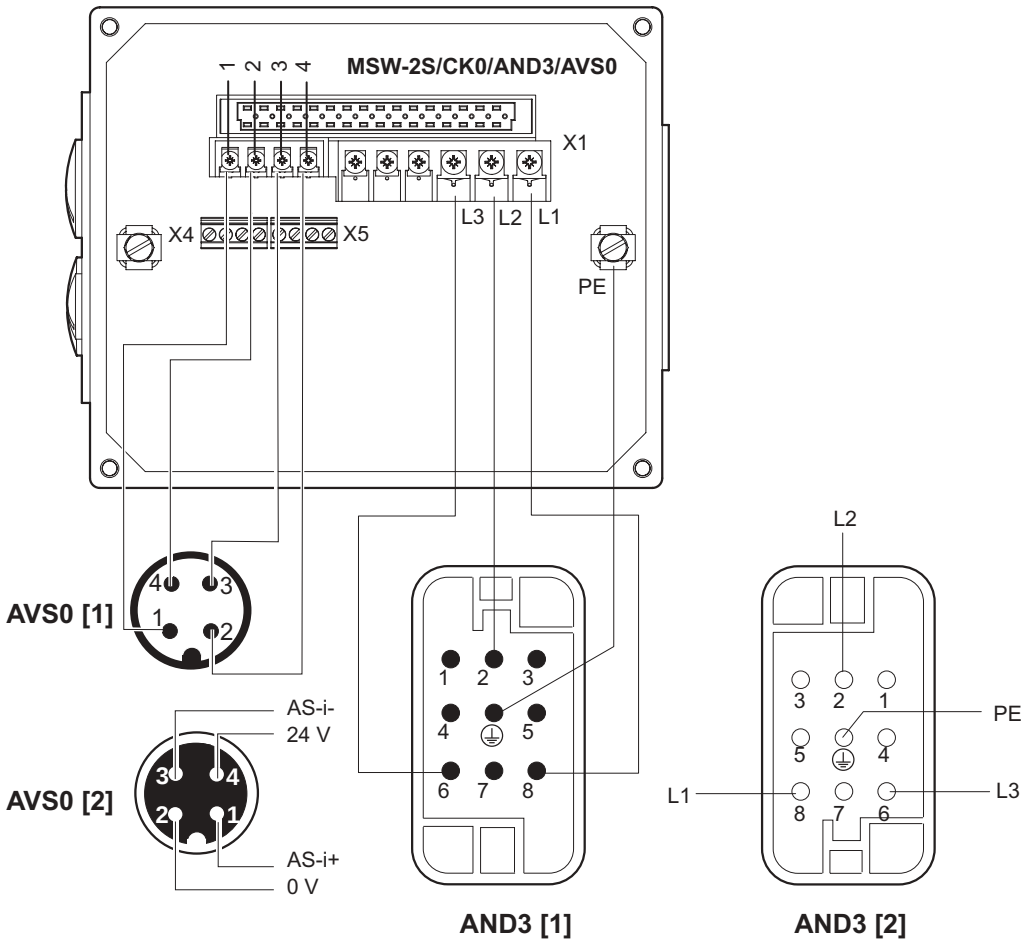
The following diagram illustrates the assignment of MOVI-SWITCH® 2S/CK0 terminals.



51354AXX

Terminal		Function
X1	**L1**	Mains terminal
	L2	Mains terminal
	L3	Mains terminal
	13	Brake connection
	14	Brake connection
	15	Brake connection
	1	AS-i + AS-interface data cable + (reserved for plug connector variants)
	2	24 V Power supply voltage 24 V_{DC} (reserved for plug connector variants)
	3	AS-i - AS-interface data cable - (reserved for plug connector variants)
	4	0V24 Reference potential 0V24 (reserved for plug connector variants)
X4:	**BR+**	for internal wiring
	TF1	for internal wiring
	BR-	for internal wiring
	TF2	for internal wiring
X5	**1**	for internal wiring
	2	for internal wiring
	3	for internal wiring
	4	for internal wiring

Design with AND3 + AVS0



[1] AVS0 plug connector (plug, standard coding)
[2] Plug connector (socket, standard coding)
[3] Plug connector AND3 (plug)
[4] Plug connector (socket)

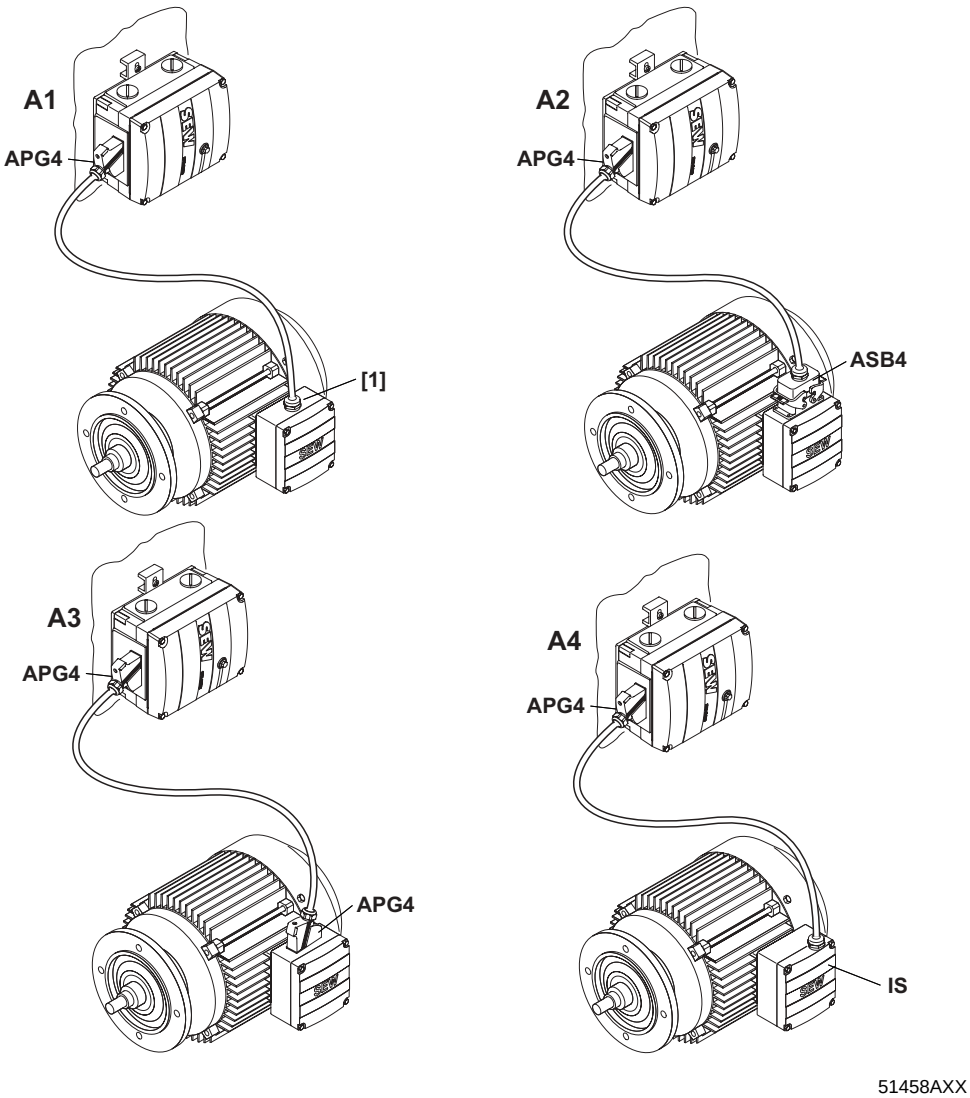
Connection between MOVI-SWITCH® and motor with mounting close to the motor

If the MOVI-SWITCH® 2S control unit with option P22 is mounted close to the motor, the connection to the motor uses a pre-fabricated cable. The following designs are possible on the MOVI-SWITCH® side:

- A: MSW-2S-07A/P22A/RI2A/**APG4**/C.0
  MSW-2S-07A/CC15/P22A/RI2A/**APG4**/C.0 (with line protection)
- B: MSW-2S-07A/P22A/RI2A/**ALA4**/C.0
  MSW-2S-07A/CC15/P22A/RI2A/**ALA4**/C.0 (with line protection)

The APG 4 design results in the following connection options to the motor, dependent upon the hybrid cable used:

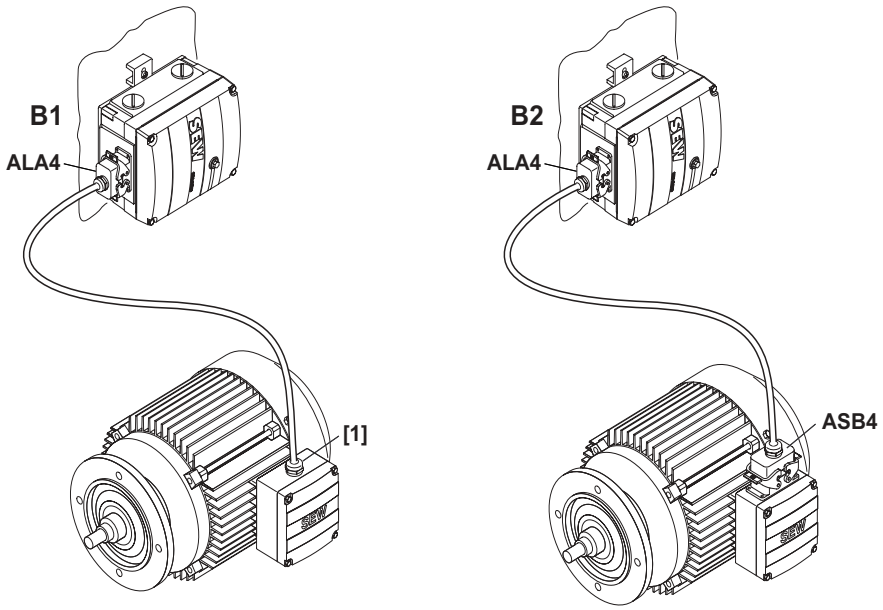
Design	A1	A2	A3	A4
MOVI-SWITCH®	APG4	APG4	APG4	APG4
Motor	Cable gland/terminals	ASB4	APG4	IS
Hybrid cable	0817 887 9	0817 889 5	0186 741 5	0816 326 X m 0816 325 1 m 0593 278 5 W 0593 755 8 W
See also...	starting on page 45	starting on page 45	starting on page 45	starting on page 45



[1] Connection via cable gland

The ALA 4 design results in the following connection options to the connected motor, dependent upon the hybrid cable used:

Design	B1	B2
MOVI-SWITCH®	ALA4	ALA4
Motor	Cable gland/terminals	ASB4
Hybrid cable	0817 886 0	0817 888 7
Additional information	starting on page 47	starting on page 47



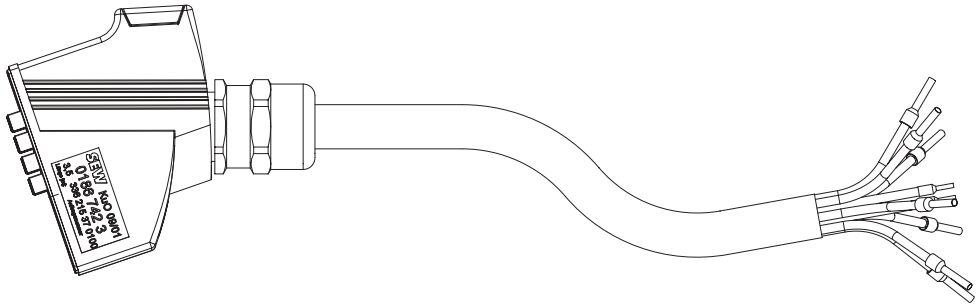
51368AXX

[1] Connection via cable gland

Hybrid cable design A

- **Design A1**

  Part number 0817 887 9 (motor lead cross section: 2.5 mm^2)

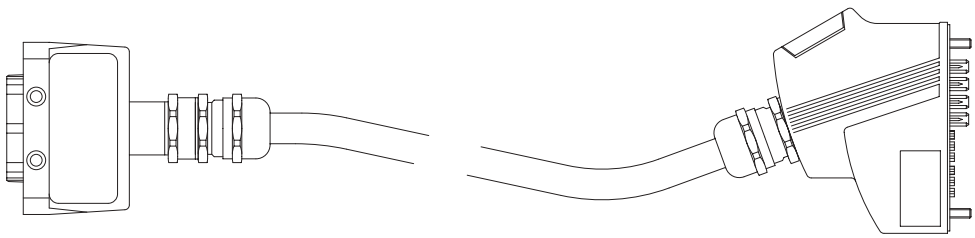


52152AXX

Cable assignment	
Motor terminal	**Core color / designation**
U1	Black / U1
V1	Black / V1
W1	Black / W1
13	Red / 13
14	White / 14
15	Blue / 15
TH	Black / 1
TH	Black / 2
PE terminal	Green-yellow + shield end (inside shield)

- **Design A2**

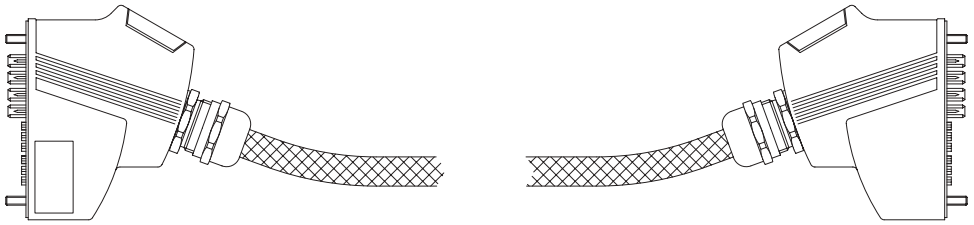
  Part number 817 889 5 (motor lead cross section: 2.5 mm^2)



52153AXX

- **Design A3**

  Part number 0816 741 5 (motor lead cross section: 1.5 mm^2)



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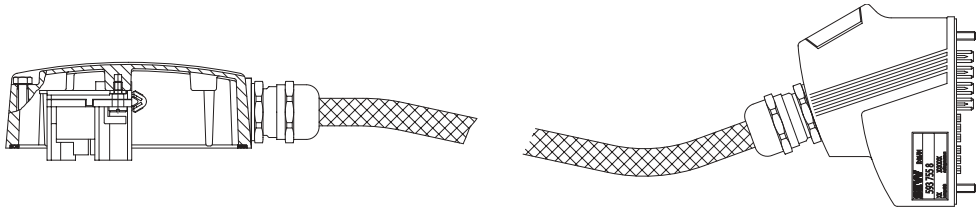
- **Design A4**



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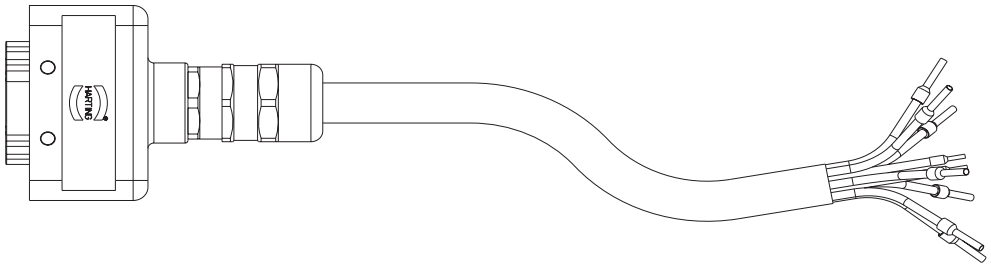
	MOVI-SWITCH® in star connection	**MOVI-SWITCH® in delta connection**
Motor with IS lower part Size DT71 – DT90	Hybrid cable part number 0593 278 5 (motor lead cross section: 1.5 mm^2)	Hybrid cable part number 0816 325 1 (motor lead cross section: 1.5 mm^2)
Motor with IS lower part Size DV100	Hybrid cable part number 0593 755 8 (motor lead cross section: 1.5 mm^2)	Hybrid cable part number 0816 326 X (motor lead cross section: 1.5 mm^2)

Hybrid cable design B

- **B1 version**

  Part number 0817 886 0 (motor lead cross section: 2.5 mm^2)



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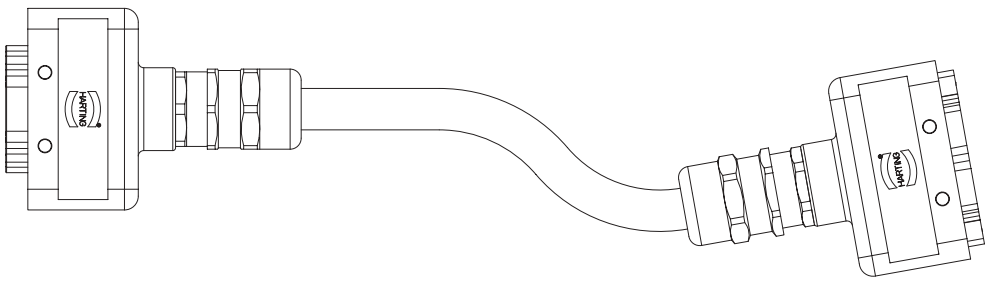
Cable assignment	
Motor terminal	**Core color / designation**
U1	Black / U1
V1	Black / V1
W1	Black / W1
13	Red / 13
14	White / 14
15	Blue / 15
TH	Black / 1
TH	Black / 2
PE terminal	Green-yellow + shield end (inside shield)

- **B2 version**

  Part number 0817 888 7 (motor lead cross section: 2.5 mm^2)



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6 Startup

6.1 Startup instructions (all MOVI-SWITCH® variants)

Startup instructions

Before startup ensure that:

- the drive is undamaged and not blocked,
- all connections have been made properly,
- the direction of rotation of the motor/gearmotor is correct,
- and all protective covers have been installed correctly.

During startup, make sure that

- the motor is running correctly (no speed fluctuations, no loud noises, etc.).

Important: On brake motors with self-reengaging manual brake releases, the lever must be removed after startup! A bracket is provided for storing it on the outside of the motor.

6.2 Startup of MOVI-SWITCH® 1E

Starting the motor

- Apply supply voltage.
- **Caution! Supply system voltage in the terminal box is permanently present (even with motor at standstill).**
- If supply voltage is present at all times (terminals U1, V1, W1), the drive is switched on/off by means of a control signal (RUN signal).

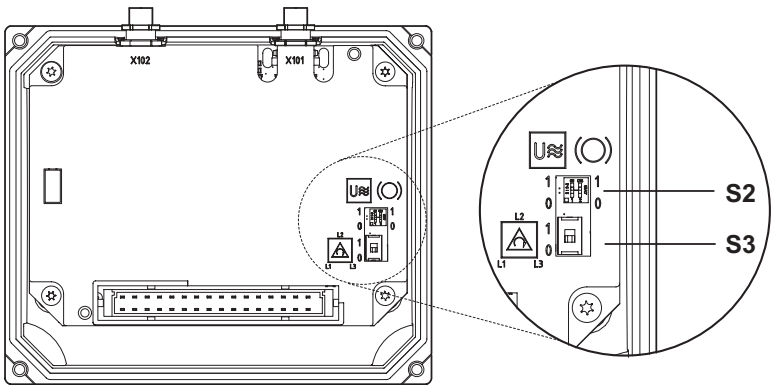
Monitoring

- The power semiconductors of the motor switch and the motor winding are thermally monitored.
- In case of an overload, the MOVI-SWITCH® drive automatically switches off.
- The monitoring status is signaled by a 24 V output (OK signal).
- **The OK output must be evaluated by a controlling system (e.g. PLC).**
- **Since a starting command causes the motor to restart automatically after cooling off, an external restarting lockout must be implemented if an automatic restart should represent a danger to person or equipment.**
- A restart is prevented and the motor stopped by connecting the checkback output (OK signal) to ground potential.
- The MOVI-SWITCH® module is protected against power supply overvoltage.

6.3 Startup of MOVI-SWITCH® 2S/CB0 (binary control)

Description of the DIP switches

MOVI-SWITCH® 2S/CB0 features 2 DIP switches (S2 and S3). The different functions are listed in the following table.



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Description of the DIP switches

State	S3	S2/1	S2/2
1	**Monitoring of phase sequence is activate**	**Monitoring of supply and phase fault is activate**	Reserved for special designs
0	Monitoring of phase sequence deactivated	Monitoring of supply and phase fault deactivated	

Monitoring of phase sequence (DIP switch S3)

- **S3 = 1:** The direction of rotation of the motor is determined by the control terminals, i.e. it is independent of the phase sequence of the supply.
- **S3 = 0:** The direction of rotation of the motor is determined by the phase sequence of the supply system and the control terminals. Changing the phases leads to a change in the direction of rotation.

Monitoring of supply and phase fault (DIP switch S2/1)

- The integrated monitoring of supply fault can be deactivated via DIP switch S2/1. A distinction between supply and phase fault is not made.
- **With DIP switch S2/1 = 1, the OK output must be evaluated by a control system (e.g. PLC)!**
- **Since removing the supply or phase fault causes the drive to restart automatically, an external restarting lockout must be implemented if an automatic restart should represent a danger to person or equipment.**

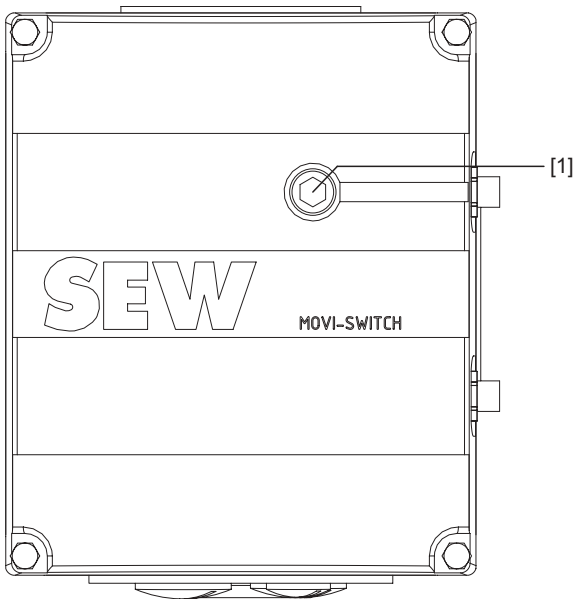
Starting the motor

- Apply supply voltage.
- If supply voltage is present at all times (terminals L1, L2, L3), the drive is switched on/off by means of a control signal (R or L signal).

Temperature monitoring

- The motor winding is thermally controlled.
- In case of an overload, the MOVI-SWITCH® drive automatically switches off.
- The monitoring status is signaled by a 24 V output (OK signal).
- The OK output must be evaluated by a controlling system (e.g. PLC).

LED display



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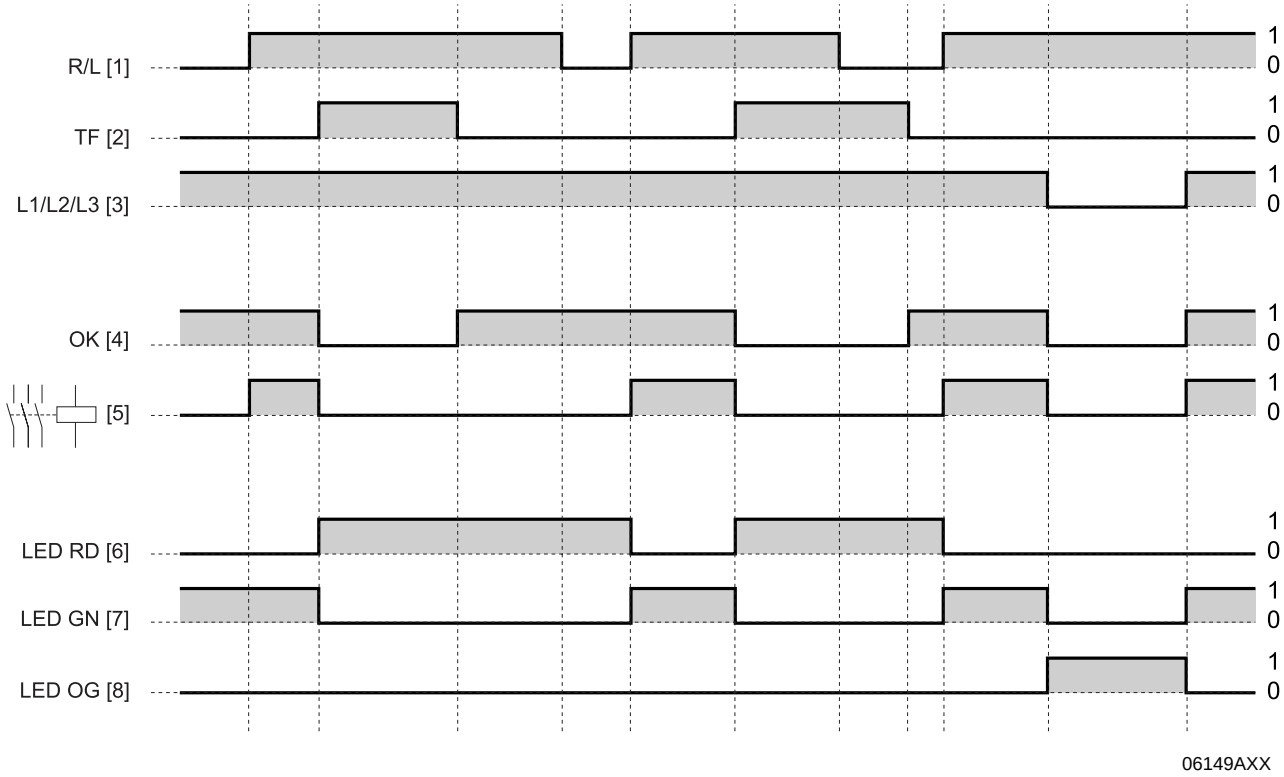
[1] Status LED

Status LED	State
Off	No 24 V power supply
Orange[1)]	24 V supply is present, supply or phase fault
Red[2)]	TF tripped
Green	Ready for operation (24 V supply is present, supply is present)

1) The status is displayed as long as the supply/phase fault exists. The drive automatically restarts after the supply or phase fault is removed.

2) The fault message is displayed until a new enable signal is issued. The enable signal can only be issued if the fault no longer exists (signaled by the OK output).

LED status is dependent on the signal level with activated supply fault monitoring

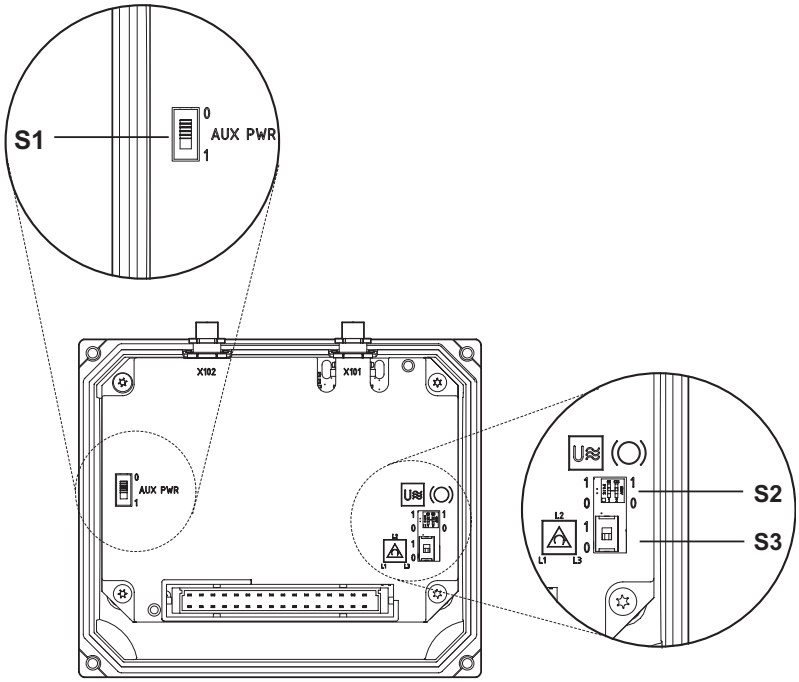


[1] Enable CW or CCW
[2] TF signal
[3] Supply voltage
[4] Ready message
[5] Motor protection
[6] Red LED
[7] Green LED
[8] Orange LED

6.4 Startup of MOVI-SWITCH® 2S/CK0 (control via AS-interface)

Description of the DIP switches

MOVI-SWITCH® 2S-CK0 features 3 DIP switches (S1, S2 and S3). The functions are listed in the following table.



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DIP switch AUX-PWR (S1):

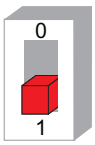
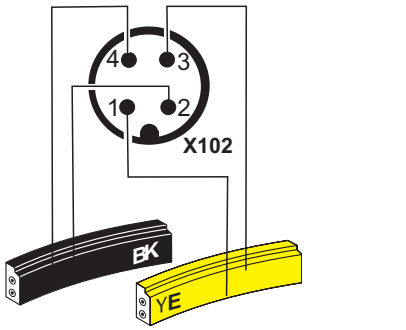
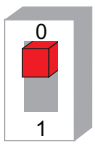
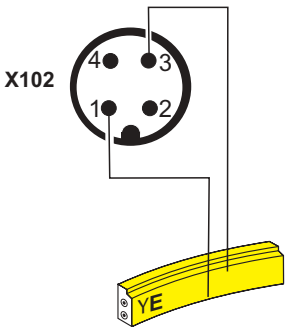
State	AUX-PWR (S1)
0	24 V power supply via AS-interface data cable
1	**24 V supply via AUX-PWR (X102 pin 4 + pin 2)**

DIP switches S2 and S3:

State	S3	S2/1	S2/2
1	**Monitoring of phase sequence is activate**	**Monitoring of supply and phase fault is activate**	Reserved for special designs
0	Monitoring of phase sequence deactivated	Monitoring of supply and phase fault deactivated	

Selection of 24 V supply voltage (DIP switch S1)

Please observe the notes in the section "Connection options for supply and control" on page 38.

DIP switch	24 V supply
Switch AUX-PWR (S1) = 1 AUX-PWR (S1)  52163AXX	Supply of MOVI-SWITCH® via AUX-PWR (e.g. black cable)  06374AXX
Switch AUX-PWR (S1) = 0 AUX-PWR (S1)  52164AXX	Supply of MOVI-SWITCH® via AS-interface data cable  06375AXX

Monitoring of phase sequence (DIP switch S3)

- **S3 = 1:** The direction of rotation of the motor is determined by the control terminals, i.e. it is independent of the phase sequence of the supply.
- **S3 = 0:** The direction of rotation of the motor is determined by the phase sequence of the supply system and the control terminals. Changing the phases leads to a change in the direction of rotation.

Monitoring of supply and phase fault (DIP switch S2/1)

- The integrated monitoring of supply fault can be deactivated via DIP switch S2/1. A distinction between supply and phase fault is not made.
- **With DIP switch S2/1 = 1, the OK output must be evaluated by a control system (e.g. PLC)!**
- **Since removing the supply or phase fault causes the drive to restart automatically, an external restarting lockout must be implemented if an automatic restart should represent a danger to person or equipment.**

Data of AS-interface master → MSW

The following table shows the 4 data bits that are transferred from the AS-interface master to the MOVI-SWITCH® via the AS-interface:

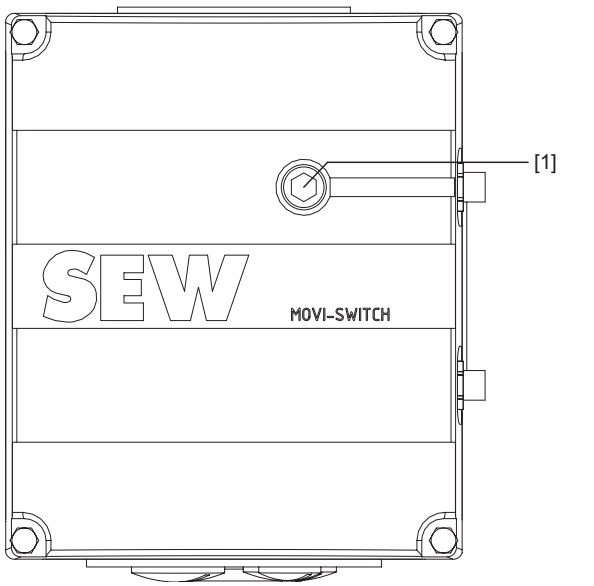
Bit	Function
D0	Start/Stop (CW rotation)
D1	Start/Stop (CCW rotation)
D2	-
D3	Enable/Reset

Data of MSW → AS-interface master

The following table shows the 4 data bits that are transferred from MOVI-SWITCH® to the AS-interface master via the AS-interface:

Bit	Function
D0	Message Ready for operation (OK)
D1	-
D2	Sensor 1 (M12 socket, pin 4)
D3	Sensor 2 (M12 socket, pin 2)

LED display

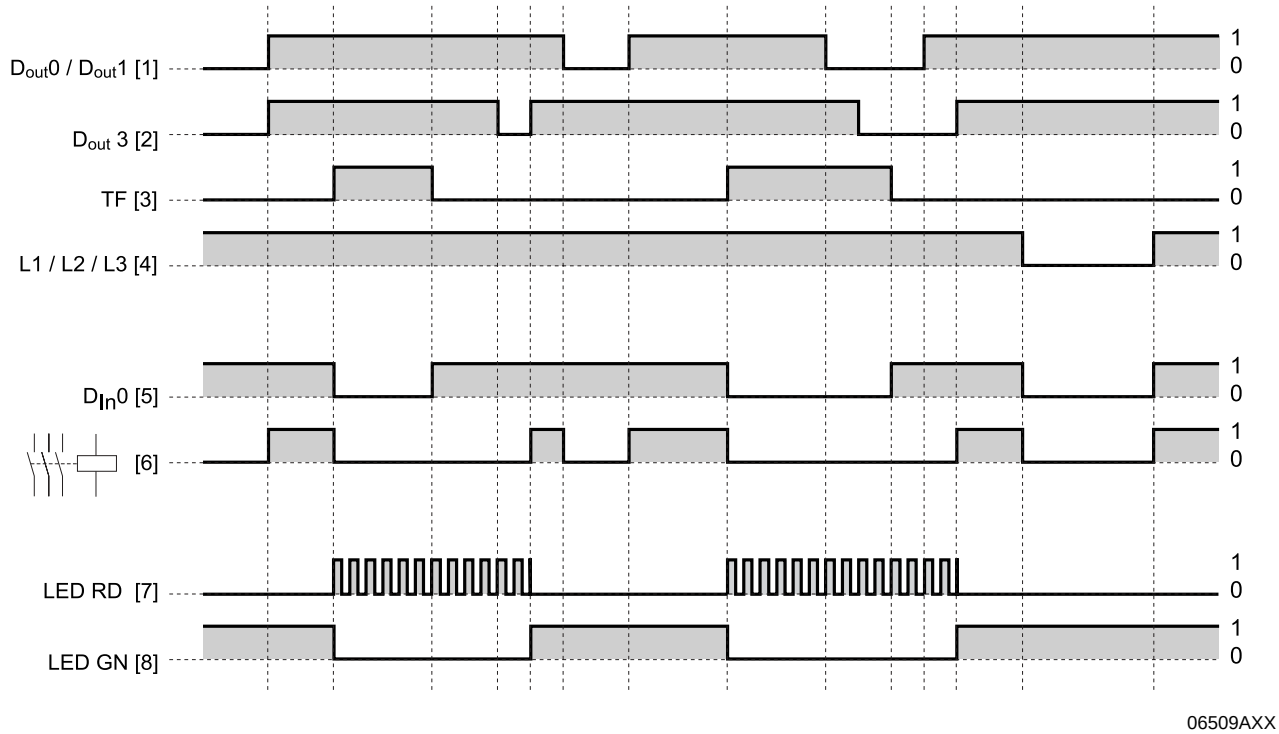


[1] Status LED

Status LED	State
Off	No connection to AS-interface
Green	Normal mode (24 V supply is present, communication is present, no fault message)
Red	• AS-interface communication faulty • Slave address 0 is set • Slave address in AS-interface master is not configured and master is in protected operating mode
Flashes red [1)]	Excessive temperature in motor

1) The fault message is displayed until a reset is performed by switching the enable signal off and on again. The reset (bit D3) can only be carried out after the motor temperature has returned to normal values.

LED status is dependent on the signal level with activated supply fault monitoring (S2/1 = 1)



[1] Enable CW or CCW
[2] Enable/Reset
[3] TF signal
[4] Supply voltage
[5] Ready message
[6] Motor protection
[7] Red LED (flashing)
[8] Green LED

Assigning the slave address

MOVI-SWITCH® drives with integrated AS-interface are supplied with address 0. The address (address 1 to 31) can be assigned as follows:

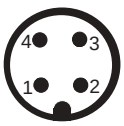
- Automatic address assignment within a projected AS-interface system with the replacement of a MOVI-SWITCH®. The following prerequisites must be met:
  - The new MOVI-SWITCH® must have address 0.
  - If several MOVI-SWITCH® are replaced, they must be replaced one by one (in sequence).
- Manual address assignment via system master (the drives must be connected to the AS-interface cable in sequence to prevent having several MOVI-SWITCH® with the same address).
- Manual address assignment by means of an AS-interface hand-held programming device (before connecting the MOVI-SWITCH® to the AS-interface cable, see the following section).

Assigning the slave address via hand-held programming device

The AS-interface hand-held programming devices offer the following functions:

- Reading and changing an AS-interface slave address
- Reading the AS-interface profile
- Reading and changing the data bits
- Functional test and test operation. The functional test and test operation require an external voltage supply (AUX-PWR) since hand-held programming devices do not supply sufficient current for operation.

The use of an addressing device requires a connecting cable that fits onto the AS-interface plug connector on the MOVI-SWITCH® 2S-CK0 (see the following figure).



1: AS-i +
2: 0V [1]
3: AS-i -
4: 24V [1]

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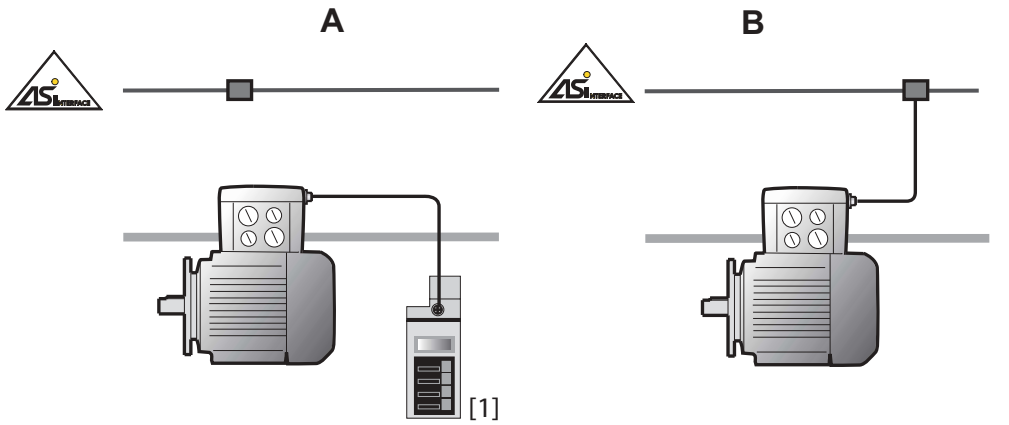
[1] Pin 2 + 4 are not required for address assignment.

If the addressing device is not floating at pin 2 + 4, pin 2 + 4 must not be connected.

Example: Every AS-interface station is individually addressed (A) and then integrated in the AS-interface (B).



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[1] AS-interface addressing device

7 Diagnostics

7.1 MOVI-SWITCH® 1E

Problem	Possible cause	Solution
Drive has incorrectdirection of rotation	• Incorrect phase sequence	• Exchange two phases at the terminal block
Motor does not run, no current input	• No supply voltage	• Inspect the supply lines and correct them • Check and replace line protection fuse
	• No control voltage	• Check 24 V_{DC} signal (terminal 24 V) and correct
	• No enable signal	• Check RUN signal (terminal RUN), correct controller fault
	• Not ready for operation, OK signal LOW	• No control voltage (terminal 24 V), correct • OK output shorted to ground, correct • Motor too hot, let motor cool, reduce load • TF not connected, check connections and correct
Motor hums, high current input	• Mechanical system is blocked • Brake does not release • Winding defective	• Mechanical fault corrected • Brake maintenance according to section "Inspection and Maintenance of MOVI-SWITCH®" • Replace drive

7.2 MOVI-SWITCH® 2S

Problem	Possible cause	Solution
Drive has incorrect-direction of rotation	• Incorrect phase sequence and DIP switch S3 is deactivated	• Exchange two phases at the terminal block • Activate DIP switch S3 (S3 = 1)
	• Odd no. of gear unit stages	• Adjust CW/CCW rotation in the control
Motor does not run, no current input	• No supply voltage	• Inspect the supply lines and correct them • Check and replace line protection fuse
	• No control voltage	• Check 24 V_{DC} signal (terminal 24 V) and correct
	• Enable signal CW or CCW is missing	• Correct enable signal (terminal R/L), control fault
	• Enable signal CW or CCW is set simultaneously	
	• Not ready for operation, OK signal LOW	• No control voltage (terminal 24 V), correct • OK output shorted to ground, correct • Motor too hot, let motor cool, reduce load • TF not connected, check connections and correct • Supply voltage/phase missing
Motor hums, high current input	• Mechanical system is blocked • Brake does not release • Winding defective	• Mechanical problem corrected • Brake maintenance according to section "Inspection and Maintenance of MOVI-SWITCH®" • Replace drive

Note: If you require assistance from our customer service, please state the following:
- Nameplate data
- Type and extent of the problem
- Time and peripheral circumstances of the problem
- Presumed cause

8 Inspection and Maintenance of MOVI-SWITCH®

- **Use only genuine spare parts in accordance with the valid parts list!**
- **Danger of burns: Motors can become very hot during operation!**

8.1 Inspection and maintenance periods

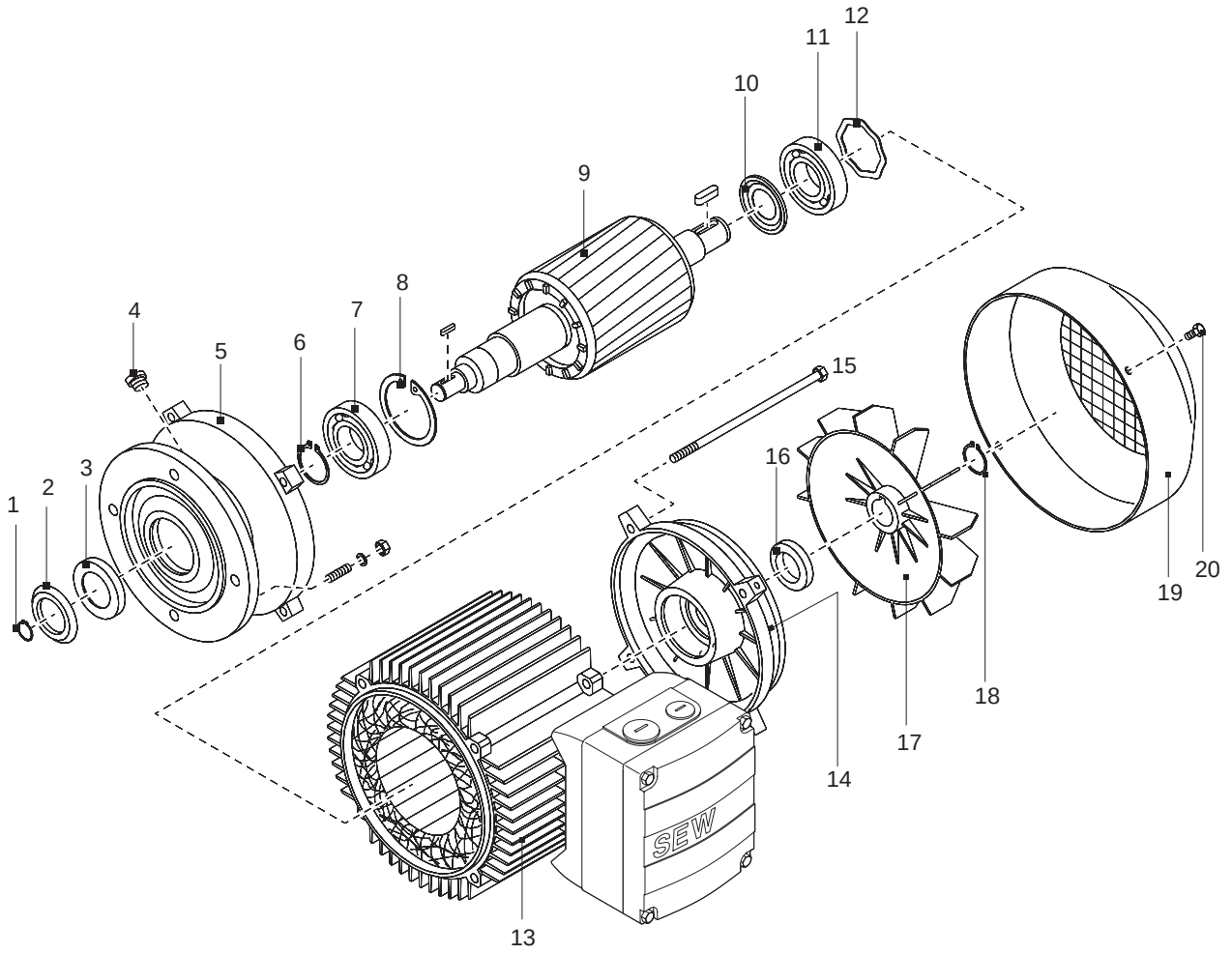
Frequency	Unit/Unit part	What to do?
At least every 3000 hours of operation[1)]	Brake	• Inspect the brake (working air gap, brake disk, pressure plate, carrier / gearing, pressure rings) • Extract the abraded matter
Every 10,000 hours of operation	Motor	• Inspect the motor (change ball bearings / oil seal) • Clean the cooling air passages
Varies (depending on external factors)	Motor	• Touch up or renew the anticorrosion coating

1) The periods of wear are affected by many factors and may be short. Calculate the required inspection and maintenance intervals separately in accordance with the project planning documents.

- The figures in the following section illustrate the design MOVISWITCH® 1E.
- The inspection and maintenance work for MOVI-SWITCH® 2S is, however, identical with that for MOVI-SWITCH® 1E.

8.2 Inspection and maintenance work on the motor

Example motor DFT...MSW..



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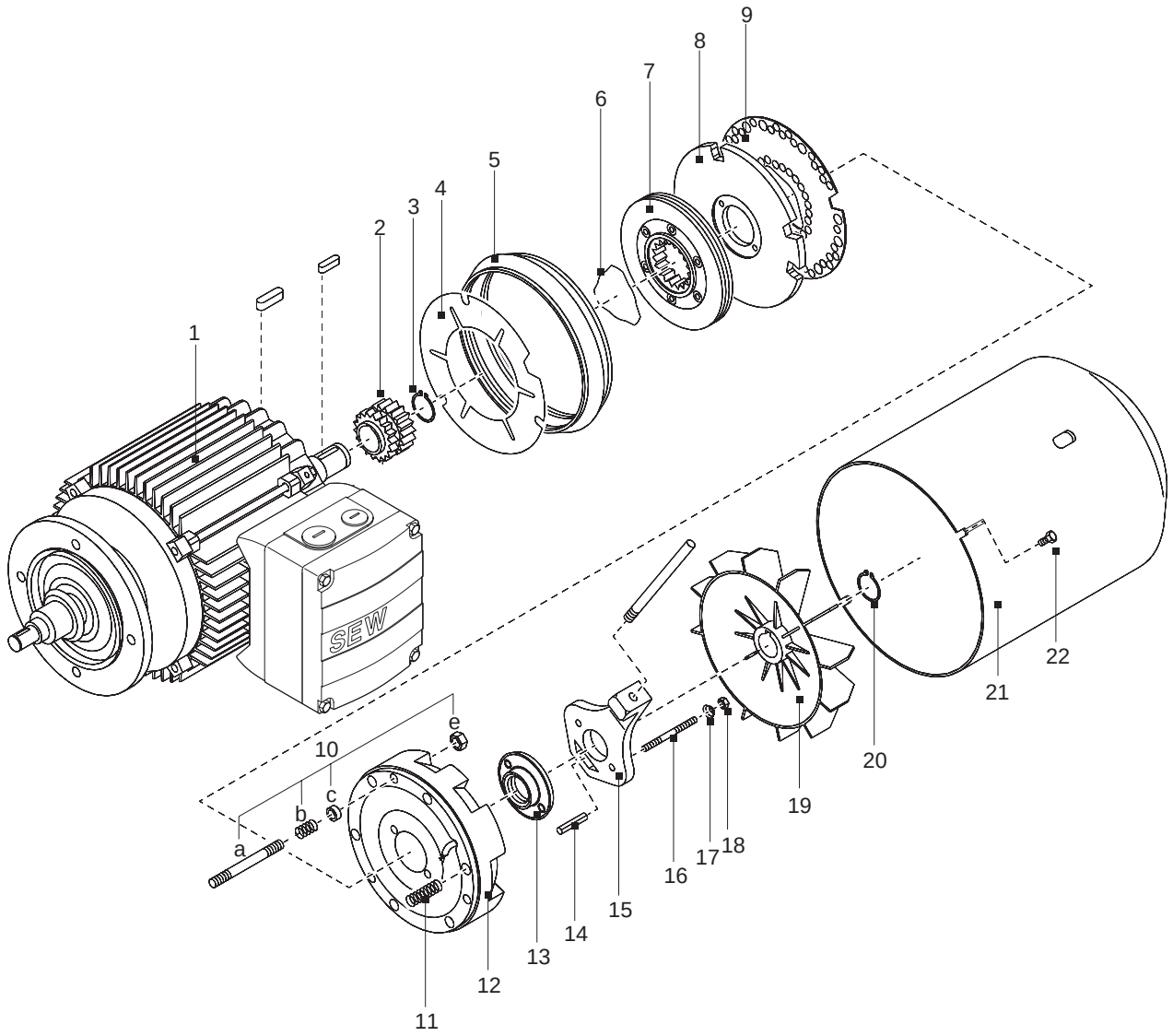
1	Circlip	6	Circlip	11	Ball bearing	16	V-ring
2	Oil flinger	7	Ball bearing	12	Equalizing ring	17	Fans
3	Oil seal	8	Circlip	13	Stator	18	Circlip
4	Screw plug	9	Rotor	14	Non-drive end bearing end shield	19	Fan guard
5	Drive end bearing end shield	10	Nilos ring	15	Hex head screw	20	Housing screw

Inspecting the motor

1. **Important: Switch off MOVI-SWITCH® and prevent it from unintentional restart.**
2. Remove the fan guard (19) and the fan (17).
3. For motors without brake:
   - Loosen hex head screw (15) and remove non drive-end bearing shield (14).
   - Detach stator (13) from drive-end bearing shield (5) and remove it
4. Motors with a brake
   - Remove terminal box cover/MOVI-SWITCH® control unit and detach brake cable from terminals
   - Attach trailing wire to brake cable
   - Loosen hex head screw (15) and remove non drive-end bearing shield (14) together with brake coil body (feed the brake cable using the trailing wire)
   - Detach stator (13) from drive-end bearing shield (5) and remove it
5. Visual check: Are there traces of gear oil or condensation inside the stator?
   - If not, continue with 7.
   - If condensation is present, continue with 6.
   - If gear oil is present, the motor must be repaired by a specialized workshop.
6. Dry the winding until the insulation resistance is sufficient. Please observe the operating instructions "DR/DT/DV AC Motors, CT/CV Asynchronous Servomotors."
7. If necessary, replace the ball bearing (7, 11) and the oil seal (3) after disassembling the rotor. Use only approved ball bearings (see page 65).
8. Reseal the stator seat, reassemble the motor, brake, etc.
9. Check the gear unit, if applicable (see gear unit operating instructions).

8.3 Inspection and maintenance work on the brake

Type BMG 05 - BMG4:



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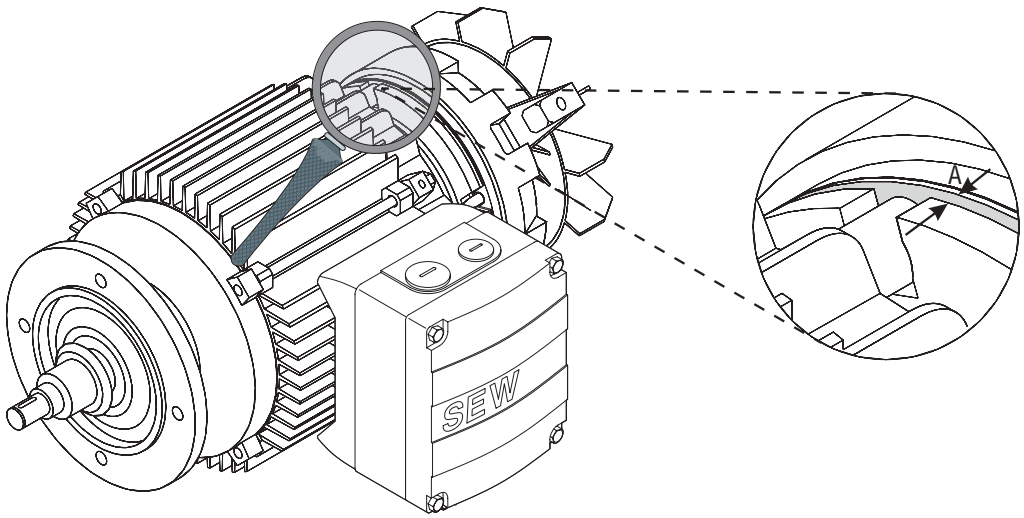
1	Motor with brake end shield	10a	Stud (3 pcs.)	16	Stud (2 pcs.)
2	Carrier	10b	Counter spring	17	Conical coil spring
3	Circlip	10c	Pressure ring	18	Setting nut
4	Niro disk	10e	Hex nut	19	Fans
5	Rubber sealing collar	11	Brake spring	20	Circlip
6	Annular spring	12	Brake coil body	21	Fan guard
7	Brake disk	13	Sealing washer	22	Housing screw
8	Pressure plate	14	Dowel pin		
9	Damping plate (BMG only)	15	Releasing lever with hand lever		

Inspecting the brake, adjusting the working air gap

1. **Switch off MOVI-SWITCH® and prevent it from unintentional restart.**
2. Remove the following:
   - Proximity sensor NV16 / NV26, if fitted
   - Flange cover or fan guard (21).
3. Move rubber sealing collar (5) (loosen clamp, if necessary). Extract abraded matter.
4. Measure the brake disk (7, 7b):
   - If the brake disk is ≤ 9 mm: Fit a new brake disk (see page 63)
5. Measure the working air gap A (see the following figure).
   - Using a feeler gauge at three points offset by approx. 120° between the pressure plate and damping plate (9)



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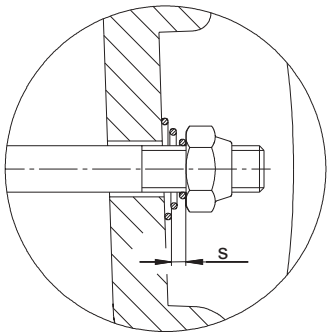
6. Tighten the hexagon nuts (10e) until the working air gap is set correctly (see page 65).
7. Install the rubber sealing collar back in place and re-install the dismantled parts.

Installing a new brake disk

When installing a new brake disk, inspect the other removed parts as well and fit new ones if necessary.

1. **Switch off MOVI-SWITCH® and prevent it from unintentional restart.**
2. Remove the following:
   - Proximity sensor NV16 / NV26, if present
   - Flange cover or fan guard (21), circlip (20) and fan (19)
3. Remove the rubber sealing collar (5).

   Remove the manual brake release: Setting nuts (18), conical coil springs (17), studs (16), releasing lever (15).
4. Loosen hexagon nuts (10e), carefully pull off the coil body (12) (Caution, brake cable!), and take out the brake springs (11).
5. Remove the damping plate (9), pressure plate (8) and brake disk (7, 7b) and clean the brake components.
6. Install a new brake disk.
7. Re-install the brake components (except for the rubber sealing collar, fan and fan guard).
8. Set the working air gap (see page 62, Points 5 to 7).
9. With manual brake release (type HF or HR):
10. Set the floating clearance via the setting nuts between the conical coil springs (pressed flat) and setting nuts (see the following figure).



06495AXX

Brake	Floating clearance s [mm]
BMG 05 - 1	1,5
BMG 2 - BMG4	2

Important: This floating clearance is necessary so that the pressure plate can move up as the brake lining wears.

11. Install the rubber sealing collar back in place and re-install the dismantled parts.

Note:

- The lockable manual brake release (type HF) is already released if a resistance is encountered when operating the grub screw.
- The self-reengaging manual brake release (type HR) can be operated with normal hand pressure.

Important: In brake motors with self-reengaging manual brake release, the manual brake release lever must be removed after startup/maintenance. A bracket is provided for storing it on the outside of the motor.

Changing the braking torque

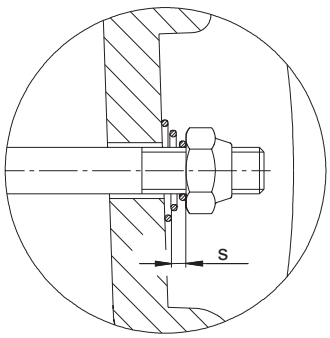
The braking torque can be adjusted in steps (see page 65).

- by installing different brake springs,
- by changing the number of brake springs.

1. **Switch off MOVI-SWITCH® and prevent it from unintentional restart.**
2. Remove the following:
   - Proximity sensor NV16 / NV26, if present
   - Flange cover or fan guard (21), circlip (20) and fan (19)
3. Remove the rubber sealing collar (5).

   Remove the manual brake release: Setting nuts (18), conical coil springs (17), studs (16), releasing lever (15).
4. Loosen the hex nuts (10e) and pull off the brake coil body (12) by approximately 50 mm (caution: brake cable!).
5. Change or add brake springs (11). (Position the brake springs symmetrically.)
6. Re-install brake components except for rubber sealing collar, fan and fan guard. Set working air gap (see page 62, points 5 to 7).
7. With manual brake release:

   Set the floating clearance between the conical coil springs (pressed flat) and release lever via the setting nuts (see the following figure).



06495AXX

Brake	Floating clearance s [mm]
BMG 05 - 1	1,5
BMG 2 - BMG4	2

Important: This floating clearance is necessary so that the pressure plate can move up as the brake lining wears.

8. Install the rubber sealing collar back in place and re-install the dismantled parts.

Note: Install new setting nuts (18) and hexagon nuts (10e) if the removal procedure is repeated! (due to reduced self-locking of nuts!).

8.4 Permitted ball bearing types

Motor type	Driving end A-bearing (AC motor, brake motor)			Non drive-end bearing (foot, flanged or gearmotors)	
	Flange-mounted motor	Gearmotor	Foot-mounted motor	AC motor	Brake motor
DT 71-80	6204-Z-J	6303-Z-J	6204-Z-J	6203-J	6203-RS-J-C3
DT 90-DV100	6306-Z-J-C3			6205-J	6205-RS-J-C3

8.5 Work done, working air gap, brake torque BMG05 - 4

Brake type	for Motor size	Work done until service [10^6 J]	Working air gap [mm] min.[1]	Working air gap [mm] max.	Braking torque settings: Braking torque [Nm]	Type and no. of springs: Normal	Type and no. of springs: Red	Order number of springs: Normal	Order number of springs: Red
BMG05 [2]	71	120	0.25	0.6	5.0 4.0 2.5 1.6 1.2	3 2 - - -	- 2 6 4 3	135 017 X	135 018 X
BMG1	80	120			10 7.5 6.0	6 4 3	- 2 3		
BMG2[3]	90 100	260			20 16 10 6.6 5.0	3 2 - - -	- 2 6 4 3	135 150 8	135 151 6
BMG4	100	260			40 30 24	6 4 3	- 2 3		

1) Please note when checking the working air gap: Parallelism tolerances on the brake disk may give rise to deviations of ± 0.15 mm after a test run.

2) BMG05: If the maximum braking torque (5 Nm) is not sufficient, it is possible to install the brake coil body of the BMG1 brake.

3) BMG2: If the maximum braking torque (20 Nm) is not sufficient, it is possible to install the brake coil body of the BMG4 brake.

9 Technical Data

9.1 MOVI-SWITCH® 1E

MOVI-SWITCH® 1E		
Supply voltages	V_{mains}	3 x 380 V_{AC} / **400 V_{AC}** /415 V_{AC} /460 V_{AC} /480 V_{AC} /500 V_{AC} ± 10%
Supply frequency	f_{mains}	50 Hz ... 60 Hz ± 10 %
Rated operating current (at 400 V)		7.0 A_{AC} (I_{min} ≥ 0.5 A)
Position of normal use		Random
Motor protection		Thermistor
Module protection		Temperature shutdown 89 to 100 °C Temperature hysteresis typ. 5 k
AC3 maximum starting frequency		1800 cycles/h
Cycle times		typ. 10 ms
Interference immunity		Meets EN 61800–3
Interference emission		Meets EN 61800–3 and class A limit to EN 55011 and EN 55014
Ambient temperature	ϑ_{amb}	**-25 °C...40 °C** (P_{rated} reduction: 3 % I_{rated} per K to max. 60 °C), no moisture condensation
Climate class		3 K3
Enclosure (motor-dependent)		IP54, IP55, IP65, IP66 (options, specify when ordering)
Operating mode		DB (EN 60149-1-1 and 1-3), S3 max. cycle duration 10 minutes
Cooling type (DIN 41 751)		Self-cooling
Altitude		h ≤ 1000 m (P_{rated} reduction: 1 % per 100 m starting at an altitude of 1000 m, see also the section "Electrical Installation – Installation Instructions")
Power supply to control electronics (M12 plug AVS1)	Pin 1 (24 V) Pin 3 (0 V)	V = +24 V ± 25 %, EN 61131-2, residual ripple max. 13 % I_E ≤ 50 mA, I_{OK} =0)
Binary inputs		Isolated by opto-coupler, PLC-compatible (EN 61131-2) R_i ≈ 3.0 kΩ, I_{in} ≈ 10 mA, sampling time ≤ 5 ms
Signal level		+13 V...+30 V = "1" = Contact closed -3 V...+5 V = "0" = Contact open
Control functions (M12 plug AVS1)	Pin 2	CW/Stop
OK output (M12 plug AVS1)	Pin 4	Response time ≤ 10 ms
Signaling function (M12 plug AVS1)	Pin 4	Output for ready signal Checkback signal Ready for operation (high): V_{OK} > $V_{24\ V}$ -3 V – with applied voltage (24 V + supply) – if no fault was detected – after self-test phase concluded (after switch-on)
	I_{OK}	Current for checkback signal max. 0.65 A, short-circuit proof

9.2 MOVI-SWITCH® 2S/CB0

MOVI-SWITCH® 2S-CB0		
Supply voltages	V_{mains}	3 x 380 V_{AC} / **400 V_{AC}** /415 V_{AC} /460 V_{AC} /480 V_{AC} /500 V_{AC} ± 10%
Supply frequency	f_{mains}	50 Hz ... 60 Hz ± 10 %
Rated operating current (at 400 V)		7.0 A_{AC}
Position of normal use		Random
Contactor switching cycles		≥ 5 million at I_E ≤ 4.0 A utilization category AC3 ≥ 1 million at I_E ≤ 7.0 A utilization category AC3
AC3 maximum starting frequency		600 cycles/h
Short-circuit fuse classification type 1		25 A
Cycle times		Switch-on/switch-off time < 50 ms Reversing time 85 ms to 150 ms
Interference immunity		Meets EN 61800–3
Interference emission		Meets EN 61800–3 and class A limit to EN 55011 and EN 55014
Ambient temperature	ϑ_{amb}	**-25 °C...40 °C** (P_{rated} reduction: 3 % I_{rated} per K to max. 60 °C), no moisture condensation
Climate class		3 K3
Enclosure (motor-dependent)		IP54, IP55, IP65, IP66 (options, specify when ordering)
Operating mode		DB (EN 60149-1-1 and 1-3), S3 max. cycle duration 10 minutes
Cooling type (DIN 41 751)		Self-cooling
Motor protection		Thermistor (non-floating connection terminals)
Altitude		h ≤ 1000 m (P_{rated} reduction: 1 % per 100 m starting at an altitude of 1000 m, see also the section "Electrical Installation – Installation Instructions")
Power supply to control electronics M12 / X102	Pin 1 (24 V) Pin 3 (0 V)	V_{in} = +24 V 25 %, EN61131-2, residual ripple max 13 % P_{in} ≤ 7 W across the entire input voltage range $I_{E\ max}$ ≤ 350 mA at V_{in} = 18 V input voltage $I_{E\ typ}$ = 250 mA at V_{in} = 24 V input voltage
Binary inputs		Isolated by opto-coupler, PLC-compatible (EN 61131-2) R_i ≈ 3.0 kΩ, I_{in} ≈ 10 mA, sampling time ≤ 5 ms
Signal level		+13 V...+30 V = "1" = Contact closed -3 V...+5 V = "0" = Contact open
Control functions M12/X102	Pin 2 Pin 4	CW/Stop CCW/Stop
Switch-on/switch-off delay		< 50 ms (delay between receipt of switch-on/switch-off command and switch-on/switch-off of the motor)
OK output (M12/X101)	Pin 4	Response time ≤ 10 ms
Signaling function (M12/X101 pin 4)		Output for ready signal Checkback signal Ready for operation (high): V_{OK} > $V_{24\ V}$ -3 V – with applied voltage (24 V + supply) – if no fault was detected – after self-test phase concluded (after switch-on)
	I_{OK}	Current for checkback signal max. 0.65 A, short-circuit proof

9.3 MOVI-SWITCH® 2S/CK0 (with integrated AS-interface)

MOVI-SWITCH® 2S-CK0		
Supply voltages	V_{mains}	3 x 380 V_{AC} / **400 V_{AC}** /415 V_{AC} /460 V_{AC} /480 V_{AC} /500 V_{AC} ± 10%
Supply frequency	f_{mains}	50 Hz ... 60 Hz ± 10 %
Rated operating current (at 400 V)		7.0 A_{AC}
Position of normal use		Random
Contactor switching cycles		≥ 5 million at I_E ≤ 4.0 A utilization category AC3 ≥ 1 million at I_E ≤ 7.0 A utilization category AC3
AC3 maximum starting frequency		600 cycles/h
Short-circuit fuse classification type 1		25 A
Cycle times		Switch-on/switch-off time < 50 ms Reversing time 85 ms to 150 ms
Interference immunity		Meets EN 61800–3
Interference emission		Meets EN 61800–3 and class A limit to EN 55011 and EN 55014
Ambient temperature	ϑ_{amb}	**-25 °C...40 °C** (P_{rated} reduction: 3 % I_{rated} per K to max. 60 °C), no moisture condensation
Climate class		3 K3
Enclosure (motor-dependent)		IP54, IP55, IP65, IP66 (options, specify when ordering)
Operating mode		DB (EN 60149-1-1 and 1-3), S3 max. cycle duration 10 minutes
Cooling type (DIN 41 751)		Self-cooling
Motor protection		Thermistor (non-floating connection terminals)
Altitude		h ≤ 1000 m (P_{rated} reduction: 1 % per 100 m starting at an altitude of 1000 m, see also the section "Electrical Installation – Installation Instructions")
Power supply to control electronics M12/X102 S1 AUX-PWR = "0"	Pin 1 (AS-i +) Pin 3 (AS-i -)	$V_{in\ AS\text{-}i}$ = [+22 V ...+32 V] Without sensor supply: $P_{in\ AS\text{-}i}$ ≤ 6 W across the entire input voltage range $I_{E\ AS\text{-}i\ max}$ ≤ 270 mA at V_{in} AS-i = 22 V input voltage $I_{E\ AS\text{-}i\ typ}$ = 220 mA at V_{in} AS-i = 26.5 V input voltage $I_{E\ AS\text{-}i}$ = 420 mA to EN 50195 Section 8.2.3.2
Power supply to control electronics M12/X102 S1 AUX-PWR = "1"	Pin 1 (AS-i +) Pin 3 (AS-i -) Pin 4 (24 V) Pin 2 (0 V)	$V_{in\ AS\text{-}i}$ = [+22 V ...+32 V] $I_{E\ AS\text{-}i}$ = 50 mA $V_{in\ AUX\text{-}PWR}$ = + 24 V 25 %, EN 61131-2, residual ripple max 13 % Without sensor supply: $P_{in\ AUX\text{-}PWR}$ ≤ 6 W across the entire input voltage range $I_{E\ AUX\text{-}PWR\ max}$ ≤ 350 mA at $V_{in\ AUX\text{-}PWR}$ = 18 V input voltage $I_{E\ AUX\text{-}PWR\ typ}$ = 250 mA at $V_{in\ AUX\text{-}PWR}$ = 24 V input voltage A PELV (Protective Extra Low Voltage) power supply to IEC 60364-4-41 with safe isolation is mandatory for the AUX-PWR auxiliary power supply.
Control functions Outputs	Bit D0 Bit D1 Bit D3	CW/Stop CCW/Stop Enable/Reset
Control functions Inputs	Bit D0 Bit D2 Bit D3	Ready message Sensor 1 (M12 socket, pin 4) Sensor 2 (M12 socket, pin 2)

MOVI-SWITCH® 2S-CK0		
AS-interface profile		S-7.F.E (free profile)
I/O configuration		7_{hex}
ID code		F_{hex}
ID2 code		E_{hex}
Address		1 to 31 (factory setting: address 0)
Watchdog		≥ 40 ms (all outputs deenergized)
Sensor connection M12 / X101		
Voltage supply	Pin 1 (+24 V) Pin 3 (0 V)	$V_{out\ sensor}$ = +24 V 25 % $I_{out\ sensor\ max}$ = 100 mA, short-circuit proof
Binary inputs DI2 / DI3 Signal level Signal delay	Pin 2 (DI3) Pin 4 (DI2)	PNP switching "1": V ≥ 10 V, I ≥ 6 mA (max. 10 mA) "0": V ≤ 5 V, I ≤ 2 mA < 5 ms

Index of Changes

This edition contains the following major amendments and changes in comparison to the preceding edition of the operating instructions MOVI-SWITCH® (document number: 10525904, Edition: 10/2001):

- New MOVI-SWITCH® variants
  - MSW/../**CB0**/..: MOVI-SWITCH®-2S for two directions of rotation and binary control
  - MSW/../**CK0**/..: MOVI-SWITCH®-2S for two directions of rotation and integrated AS Interface
- Only in connection with modular terminal box:
  - Option P2.A for mounting on motor (shouldered) of the MOVI-SWITCH® control unit
  - Description for subsequent turning of the modular terminal box.
- New wiring diagrams for optional MOVI-SWITCH®-1E plug connector ASA3

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Headquarters **Production** **Sales** **Service**	**Bruchsal**	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 42 D-76646 Bruchsal P.O. Box Postfach 3023 · D-76642 Bruchsal	Tel. +49 7251 75-0 Fax +49 7251 75-1970 http://www.sew-eurodrive.de sew@sew-eurodrive.de Service Electronics: Tel. +49 171 7210791 Service Gear Units and Motors: Tel. +49 172 7601377
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	Vancouver	SEW-EURODRIVE CO. OF CANADA LTD. 7188 Honeyman Street Delta. B.C. V4G 1 E2	Tel. +1 604 946-5535 Fax +1 604 946-2513 b.wake@sew-eurodrive.ca
	Montreal	SEW-EURODRIVE CO. OF CANADA LTD. 2555 Rue Leger Street LaSalle, Quebec H8N 2V9	Tel. +1 514 367-1124 Fax +1 514 367-3677 a.peluso@sew-eurodrive.ca
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Great Britain			
Assembly **Sales** **Service**	**Normanton**	SEW-EURODRIVE Ltd. Beckbridge Industrial Estate P.O. Box No.1 GB-Normanton, West- Yorkshire WF6 1QR	Tel. +44 1924 893-855 Fax +44 1924 893-702 http://www.sew-eurodrive.co.uk info@sew-eurodrive.co.uk

Greece			
Sales **Service**	**Athen**	Christ. Boznos & Son S.A. 12, Mavromichali Street P.O. Box 80136, GR-18545 Piraeus	Tel. +30 2 1042 251-34 Fax +30 2 1042 251-59 http://www.boznos.gr Boznos@otenet.gr

Hong Kong			
Assembly **Sales** **Service**	**Hong Kong**	SEW-EURODRIVE LTD. Unit No. 801-806, 8th Floor Hong Leong Industrial Complex No. 4, Wang Kwong Road Kowloon, Hong Kong	Tel. +852 2 7960477 + 79604654 Fax +852 2 7959129 sew@sewhk.com

Hungary			
Sales **Service**	**Budapest**	SEW-EURODRIVE Kft. H-1037 Budapest Kunigunda u. 18	Tel. +36 1 437 06-58 Fax +36 1 437 06-50 sew-eurodrive.voros@matarnet.hu

India			
Assembly **Sales** **Service**	**Baroda**	SEW-EURODRIVE India Pvt. Ltd. Plot No. 4, Gidc Por Ramangamdi · Baroda - 391 243 Gujarat	Tel. +91 265 2831021 Fax +91 265 2831087 sew.baroda@gecsl.com
Technical Offices	**Bangalore**	SEW-EURODRIVE India Private Limited 308, Prestige Centre Point 7, Edward Road Bangalore	Tel. +91 80 22266565 Fax +91 80 22266569 sewbangalore@sify.com
	Mumbai	SEW-EURODRIVE India Private Limited 312 A, 3rd Floor, Acme Plaza Andheri Kurla Road, Andheri (E) Mumbai	Tel. +91 22 28348440 Fax +91 22 28217858 sewmumbai@vsnl.net

Ireland			
Sales **Service**	**Dublin**	Alperton Engineering Ltd. 48 Moyle Road Dublin Industrial Estate Glasnevin, Dublin 11	Tel. +353 1 830-6277 Fax +353 1 830-6458

Italy			
Assembly **Sales** **Service**	**Milano**	SEW-EURODRIVE di R. Blickle & Co.s.a.s. Via Bernini,14 I-20020 Solaro (Milano)	Tel. +39 2 96 9801 Fax +39 2 96 799781 sewit@sew-eurodrive.it

Ivory Coast			
Sales	**Abidjan**	SICA Ste industrielle et commerciale pour l'Afrique 165, Bld de Marseille B.P. 2323, Abidjan 08	Tel. +225 2579-44 Fax +225 2584-36

Japan			
Assembly **Sales** **Service**	**Toyoda-cho**	SEW-EURODRIVE JAPAN CO., LTD 250-1, Shimoman-no, Toyoda-cho, Iwata gun Shizuoka prefecture, 438-0818	Tel. +81 538 373811 Fax +81 538 373814 sewjapan@sew-eurodrive.co.jp

Korea			
Assembly **Sales** **Service**	**Ansan-City**	SEW-EURODRIVE KOREA CO., LTD. B 601-4, Banweol Industrial Estate Unit 1048-4, Shingil-Dong Ansan 425-120	Tel. +82 31 492-8051 Fax +82 31 492-8056 master@sew-korea.co.kr

Latvia			
Sales	**Riga**	SIA Gultni 21, Unijas Street LV-1039 Riga	Tel. +371 7 840202 Fax +371 7 840088 gultni@isr.lv

Lebanon			
Sales	**Beirut**	Gabriel Acar & Fils sarl B. P. 80484 Bourj Hammoud, Beirut	Tel. +961 1 4947-86 +961 1 4982-72 +961 3 2745-39 Fax +961 1 4949-71 gacar@beirut.com

Lithuania			
Sales	**Alytus**	UAB Irseva Merkines g. 2A LT-4580 Alytus	Tel. +370 315 79204 Fax +370 315 79688 irmantas.irseva@one.lt

Luxembourg			
Assembly **Sales** **Service**	**Brüssel**	CARON-VECTOR S.A. Avenue Eiffel 5 B-1300 Wavre	Tel. +32 10 231-311 Fax +32 10 231-336 http://www.caron-vector.be info@caron-vector.be

Malaysia			
Assembly **Sales** **Service**	**Johore**	SEW-EURODRIVE SDN BHD No. 95, Jalan Seroja 39, Taman Johor Jaya 81000 Johor Bahru, Johor West Malaysia	Tel. +60 7 3549409 Fax +60 7 3541404 kchtan@pd.jaring.my

Morocco			
Sales	**Casablanca**	S. R. M. Société de Réalisations Mécaniques 5, rue Emir Abdelkader 05 Casablanca	Tel. +212 2 6186-69 + 6186-70 + 6186-71 Fax +212 2 6215-88 srm@marocnet.net.ma

Netherlands			
Assembly **Sales** **Service**	**Rotterdam**	VECTOR Aandrijftechniek B.V. Industrieweg 175 NL-3044 AS Rotterdam Postbus 10085 NL-3004 AB Rotterdam	Tel. +31 10 4463-700 Fax +31 10 4155-552 http://www.vector.nu info@vector.nu

New Zealand			
Assembly **Sales** **Service**	**Auckland**	SEW-EURODRIVE NEW ZEALAND LTD. P.O. Box 58-428 82 Greenmount drive East Tamaki Auckland	Tel. +64 9 2745627 Fax +64 9 2740165 sales@sew-eurodrive.co.nz
	Christchurch	SEW-EURODRIVE NEW ZEALAND LTD. 10 Settlers Crescent, Ferrymead Christchurch	Tel. +64 3 384-6251 Fax +64 3 384-6455 sales@sew-eurodrive.co.nz

Norway			
Assembly **Sales** **Service**	**Moss**	SEW-EURODRIVE A/S Solgaard skog 71 N-1599 Moss	Tel. +47 69 241-020 Fax +47 69 241-040 sew@sew-eurodrive.no

Peru			
Assembly **Sales** **Service**	**Lima**	SEW DEL PERU MOTORES REDUCTORES S.A.C. Los Calderos <FmSdata>[Idot] 120-124 Urbanizacion Industrial Vulcano, ATE, Lima	Tel. +51 1 3495280 Fax +51 1 3493002 sewperu@terra.com.pe

Poland			
Assembly **Sales** **Service**	**Lodz**	SEW-EURODRIVE Polska Sp.z.o.o. ul. Techniczna 5 PL-92-518 Lodz	Tel. +48 42 67710-90 Fax +48 42 67710-99 http://www.sew-eurodrive.pl sew@sew-eurodrive.pl

Portugal			
Assembly **Sales** **Service**	**Coimbra**	SEW-EURODRIVE, LDA. Apartado 15 P-3050-901 Mealhada	Tel. +351 231 20 9670 Fax +351 231 20 3685 http://www.sew-eurodrive.pt infosew@sew-eurodrive.pt

Romania			
Sales **Service**	**Bucuresti**	Sialco Trading SRL str. Madrid nr.4 71222 Bucuresti	Tel. +40 21 230-1328 Fax +40 21 230-7170 sialco@sialco.ro

Russia			
Sales	**St. Petersburg**	ZAO SEW-EURODRIVE P.O. Box 263 RUS-195220 St. Petersburg	Tel. +7 812 5357142 +812 5350430 Fax +7 812 5352287 sew@sew-eurodrive.ru

Senegal			
Sales	**Dakar**	SENEMECA Mécanique Générale Km 8, Route de Rufisque B.P. 3251, Dakar	Tel. +221 849 47-70 Fax +221 849 47-71 senemeca@sentoo.sn

Serbia and Montenegro			
Sales	**Beograd**	DIPAR d.o.o. Kajmakcalanska 54 SCG-11000 Beograd	Tel. +381 11 3046677 Fax +381 11 3809380 dipar@yubc.net

Singapore			
Assembly **Sales** **Service**	**Singapore**	SEW-EURODRIVE PTE. LTD. No 9, Tuas Drive 2 Jurong Industrial Estate Singapore 638644	Tel. +65 68621701 ... 1705 Fax +65 68612827 Telex 38 659 sales@sew-eurodrive.com.sg

Slovakia			
Sales	**Sered**	SEW-Eurodrive SK s.r.o. Trnavska 920 SK-926 01 Sered	Tel. +421 31 7891311 Fax +421 31 7891312 sew@sew-eurodrive.sk

Slovenia			
Sales **Service**	**Celje**	Pakman - Pogonska Tehnika d.o.o. UI. XIV. divizije 14 SLO – 3000 Celje	Tel. +386 3 490 83-20 Fax +386 3 490 83-21 pakman@siol.net

South Africa			
Assembly **Sales** **Service**	**Johannesburg**	SEW-EURODRIVE (PROPRIETARY) LIMITED Eurodrive House Cnr. Adcock Ingram and Aerodrome Roads Aeroton Ext. 2 Johannesburg 2013 P.O.Box 90004 Bertsham 2013	Tel. +27 11 248-7000 Fax +27 11 494-2311 ljansen@sew.co.za
	Capetown	SEW-EURODRIVE (PROPRIETARY) LIMITED Rainbow Park Cnr. Racecourse & Omuramba Road Montague Gardens Cape Town P.O.Box 36556 Chempet 7442 Cape Town	Tel. +27 21 552-9820 Fax +27 21 552-9830 Telex 576 062 dswanepoel@sew.co.za
	Durban	SEW-EURODRIVE (PROPRIETARY) LIMITED 2 Monaceo Place Pinetown Durban P.O. Box 10433, Ashwood 3605	Tel. +27 31 700-3451 Fax +27 31 700-3847 dtait@sew.co.za

Spain			
Assembly **Sales** **Service**	**Bilbao**	SEW-EURODRIVE ESPAÑA, S.L. Parque Tecnológico, Edificio, 302 E-48170 Zamudio (Vizcaya)	Tel. +34 9 4431 84-70 Fax +34 9 4431 84-71 sew.spain@sew-eurodrive.es

Sweden			
Assembly **Sales** **Service**	**Jönköping**	SEW-EURODRIVE AB Gnejsvägen 6-8 S-55303 Jönköping Box 3100 S-55003 Jönköping	Tel. +46 36 3442-00 Fax +46 36 3442-80 http://www.sew-eurodrive.se info@sew-eurodrive.se

Switzerland			
Assembly **Sales** **Service**	**Basel**	Alfred Imhof A.G. Jurastrasse 10 CH-4142 Münchenstein bei Basel	Tel. +41 61 41717-17 Fax +41 61 41717-00 http://www.imhof-sew.ch info@imhof-sew.ch

Thailand			
Assembly **Sales** **Service**	**Chon Buri**	SEW-EURODRIVE (Thailand) Ltd. Bangpakong Industrial Park 2 700/456, Moo.7, Tambol Donhuaroh Muang District Chon Buri 20000	Tel. +66 38 454281 Fax +66 38 454288 sewthailand@sew-eurodrive.co.th

Tunisia			
Sales	**Tunis**	T. M.S. Technic Marketing Service 7, rue Ibn El Heithem Z.I. SMMT 2014 Mégrine Erriadh	Tel. +216 1 4340-64 + 1 4320-29 Fax +216 1 4329-76

Turkey			
Assembly **Sales** **Service**	**Istanbul**	SEW-EURODRIVE Hareket Sistemleri Sirketi Bagdat Cad. Koruma Cikmazi No. 3 TR-81540 Maltepe ISTANBUL	Tel. +90 216 4419163 + 216 4419164 + 216 3838014 Fax +90 216 3055867 sew@sew-eurodrive.com.tr

USA			
Production **Assembly** **Sales** **Service**	**Greenville**	SEW-EURODRIVE INC. 1295 Old Spartanburg Highway P.O. Box 518 Lyman, S.C. 29365	Tel. +1 864 439-7537 Fax Sales +1 864 439-7830 Fax Manuf. +1 864 439-9948 Fax Ass. +1 864 439-0566 Telex 805 550 http://www.seweurodrive.com cslyman@seweurodrive.com
Assembly **Sales** **Service**	**San Francisco**	SEW-EURODRIVE INC. 30599 San Antonio St. Hayward, California 94544-7101	Tel. +1 510 487-3560 Fax +1 510 487-6381 cshayward@seweurodrive.com
	Philadelphia/PA	SEW-EURODRIVE INC. Pureland Ind. Complex 2107 High Hill Road, P.O. Box 481 Bridgeport, New Jersey 08014	Tel. +1 856 467-2277 Fax +1 856 467-3792 csbridgeport@seweurodrive.com
	Dayton	SEW-EURODRIVE INC. 2001 West Main Street Troy, Ohio 45373	Tel. +1 937 335-0036 Fax +1 937 440-3799 cstroy@seweurodrive.com
	Dallas	SEW-EURODRIVE INC. 3950 Platinum Way Dallas, Texas 75237	Tel. +1 214 330-4824 Fax +1 214 330-4724 csdallas@seweurodrive.com
	Additional addresses for service in the USA provided on request!		

Venezuela			
Assembly **Sales** **Service**	**Valencia**	SEW-EURODRIVE Venezuela S.A. Av. Norte Sur No. 3, Galpon 84-319 Zona Industrial Municipal Norte Valencia, Estado Carabobo	Tel. +58 241 832-9804 Fax +58 241 838-6275 sewventas@cantv.net sewfinanzas@cantv.net

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